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Water Year 1979. Volume 1. Western Washington

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Tacoma, WA

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Water Resources data for the 1979 water year for Washington consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground-water wells. This report in two volumes contains records for water discharge at 237 gaging stations; stage only at 5 gaging stations; stage and contents at 43 lakes and reservoirs; water quality at 135 gaging stations (including 6 lakes and reservoirs) and 100 wells; and water levels at 164 observations wells. Also included are data for 88 crest-stage, and 89 water-quality partial-record stations. Additional water data were collected at various sites not involved in the systematic data-collection program and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State, local, and Federal agencies in Washington.

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Volume 1. Western Washington

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WA-79-1

WATER YEAR 1979

Prepared in cooperation with the State of Washington and with other agencies

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U.S. DEPARTMENT OF COMMERCE
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CALENDAR FOR WATER YEAR 1979

1978

OCTOBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
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29	30	31				

NOVEMBER

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DECEMBER

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31						

1979

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SEPTEMBER

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30						

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March 3, 1849

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Water Resources Data for Washington

Volume 1. Western Washington

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WA-79-1

WATER YEAR 1979

Prepared in cooperation with the State of Washington and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. William Menard, Director

For additional information write to
District Chief, Water Resources Division
U. S. Geological Survey
1201 Pacific Avenue Suite 600
Tacoma, Washington 98402
1980

PREFACE

This report was prepared by personnel of the Washington district of the Water Resources Division of the U.S. Geological Survey under the supervision of C. R. Collier, District Chief, and W. H. Robinson, Regional Hydrologist, Western Region. It was done in cooperation with the State of Washington and with other agencies.

This report is one of a series issued annually for each State. General direction for the series is by J. S. Cragwall, Jr., Chief Hydrologist, and Philip Cohen, Assistant Chief Hydrologist for Scientific Publications and Data Management, U.S. Geological Survey.

Data for the State of Washington are in two volumes as follows:

Volume 1. Western Washington

Volume 2. Eastern Washington

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(Letter after station name designates type of data: (d) discharge (e) elevation, gage height or contents, (c) chemical, (b) biological, (m) microbiological (t) water temperature (s) sediment (p) pesticide)

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WATER RESOURCES DATA FOR WASHINGTON, 1979

INTRODUCTION

Water resources data for the 1979 water year for Washington consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground-wells. This report, in two volumes, contains records for water discharge at 237 gaging stations; stage only at 5 gaging stations; stage and contents at 43 lakes and reservoirs; water quality at 135 gaging stations (including 6 lakes and reservoirs) and 100 wells; and water levels at 164 observation wells. Also included are data for 88 crest-stage and 89 water-quality partial-record stations. Locations of sites in this volume are on figures 4, 5, 6, and 22. Additional water data were collected at various sites not involved in the systematic data-collection program and are published as miscellaneous measurements and analyses. These data represent that part of the national Water Data system operated by the U.S. Geological Survey and cooperating State, local, and Federal agencies in Washington.

Records of discharge and stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water supply papers entitled "Quality of Surface Water of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled "Ground Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from the Branch of Distribution, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202.

For water years 1961 through 1974, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1974 were similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1975 water year, water data for streamflow, water quality, and ground water are published in official Survey reports on a State-boundary basis. These official Survey reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report WA-79-1". For archiving and general distribution, the reports for water years, 1971-74 are also identified as water-data reports. These water-data reports are on sale, in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the district chief at the address given on the on the back of the title page or by telephone (206) 593-6510.

COOPERATION

The U.S. Geological Survey and organizations of the State of Washington have had cooperative agreements for the systematic collection of surface-water and water-quality records since 1909. Organizations that supplied data are acknowledged in the station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

Washington State Department of Ecology, Wilbur G. Hallauer, director
Washington State Department of Fisheries, Gordon Sandison, director
Washington State Department of Transportation, William A. Bulley, secretary
Washington State Department of Game, Ralph W. Larson, director
City of Seattle, Department of Lighting, Robert Murray, superintendent
Municipality of Metropolitan Seattle, Neil Peterson, executive director
City of Tacoma, Department of Public Utilities, P. J. Nolan, director
City of Tacoma, Department of Public Works, Ronald M. Button, director
City of Everett, Department of Utilities, Marvin C. Haglund, director
City of Bellevue, Department of Public Works, Clark Douglas, director
Chelan County, P.U.D. No. 1, Howard Elmore, manager
King County, Department of Public Works, James W. Guenther, director
Lewis County, Department of Public Works, Verne Wagar, director
Spokane County Board of Commissioners, Jerry C. Kopet, chairman
Quileute Tribal Council, Christian Penn, Sr., chairman
Quinault Tribal Council, Joseph B. DeLaCruz, president
Makah Tribal Council, Dale W. Johnson
Spokane Tribe, Glenn F. Galbraith, executive director
Yakima Tribal Council, Watson Totus, chairman
Washington State University, Department of Agricultural Engineering, Dr. Larry King
South Columbia Basin Irrigation District, Russell D. Smith, secretary-manager
Shoalwater Tribal Council, Douglas M. Davis, chairman
Hoh Tribal Council, John Leitka, chairman
Pierce County Board of Commissioners, Joe Stortini, chairman
Clallam County Board of Commissioners, Dick Lotzgesell, chairman

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 47 gaging stations; the U.S. Environmental Protection Agency, in collecting records for one water-quality station; the U.S. Energy Research and Development Administration, in collecting records for 6 water-quality stations; the Bureau of Reclamation, U.S. Department of Interior, in collecting records for 19 gaging stations; the U.S. Department of State, in collecting records for 15 gaging stations; the Bonneville Power Administration, in collecting records for 4 gaging stations.

The following organizations aided in collecting records:

Crown Zellerbach Corporation; City of Fircrest, Intercounty River Improvement; ITT Rayonier; City of Olympia, Pacific Power and Light Co., Public Utility Districts, No. 1 of Cowlitz County, No. 1 of Douglas County, No. 2 of Grant County, No. 1 of Pend Oreille County, No. 1 of Snohomish County, Puget Sound Power and Light Co., Skagit County Public Works Department; University of Washington, through its Fisheries Research Institute and Civil Engineering Department; Washington Public Power Supply System; Washington Water Power Co., Whatcom County Engineer.

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report are defined below. See also table for converting English units to International System of units (SI) on the inside of the back cover.

Acre-foot (AC-FT, ac-ft) is a quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic metres.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Bacteria are microscopic unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse of plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal coliform bacteria are bacteria that are present in the intestines or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ± 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of samples.

Fecal streptocaccal bacteria are bacteria found also in intestines of warm-blood animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterrococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of only readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Total in bottom material is the total amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

Cells/volume referes to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonacous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloro-platinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulated the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet or water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Cubic foot per second (FT^3/s, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment), that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to the amount of substance present in true chemical solution. In practice, however, the term includes all forms of substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (coloidal) suspended particles. Analyses are performed on filtered samples.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = -\sum_{i=1}^{s} \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

Where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specific location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontribution area, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Hydrologic unit is a geographic area representing part of all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram (*ug/g*) is a unit expressing the concentrations of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, *ug/L*) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L,*mg/L*) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L, and is based on the mass of sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters (m^2), acres, or hectares. Periphyton benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Partial-size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology.

The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.........	0.00024 - 0.004	Sedimentation
Silt.........	.004 - .062	Sedimentation
Sand.........	.062 - 2.0	Sedimentation or sieve
Gravel.......	2.0 -64.0	Sieve

The particle-size distribution given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass or volume.

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

Picocurie (PC, pCi) is one trillienth (1×10^{12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10}) radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells/mL of sample.

Green algae have chlorophyll pigments similar in color to those higher green plants. Some forms produce algal mats or floating "moss in lakes." Their concentrations are expressed as number of cells/mL of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column, and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifiers.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water, it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cuase of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge times mg/L times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the work "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lived.

Natural substrates refers to any naturally occurring emersed or submersed solid surface, such as rock or tree, upon which an organism lived.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of aftificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplace samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the area are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determines all of the constituent in the sample.)

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdam and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, *Hexagenia limbata* is the following:

Kingdom...................Animal
Phylum................Arthropoda
Class....................Insecta
Order............ Ephemeroptera
Family...............Ephemeridae
Genus..................*Hexageria*
Species.........*Hexagenia limbata*

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary that enters between two main-stream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is situated with respect to the stream to which it is immediately tributary is indicated by an indention in a list of stations in the front of the report. Each indention represents one rank. This downstream order and system of indention show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence the numbers are not consecutive. The complete 8-digit number for each station such as 12041000, which appears just to the left of the station name, includes the 2-digit part number "12" plus the 6-digit downstream order number "041000."

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The 8-digit downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. See figure 1 below.

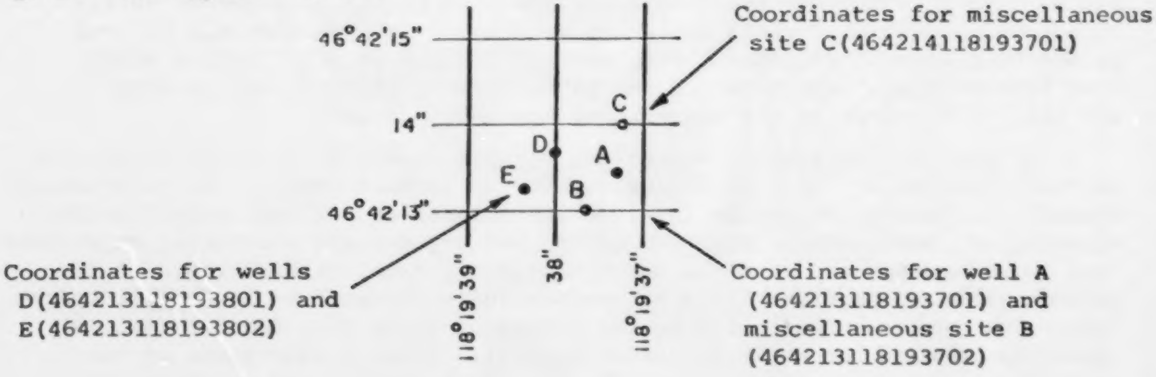

46°42'15"
Coordinates for miscellaneous site C(464214118193701)
C
14"
D
A
E
B
46°42'13"
Coordinates for wells D(464213118193801) and E(464213118193802)
118°19'39"
38"
118°19'37"
Coordinates for well A (464213118193701) and miscellaneous site B (464213118193702)

Figure 1. System for numbering wells and miscellaneous sites (latitude and longtitude).

Local identifier well-numbering system

Local identifier well numbers used by the Geological Survey in the State of Washington are based on and show locations of wells according to the rectangular system for subdivision of public land, indicating township, range, section, and 40-acre tract within the section. For example, in the well number 25/43E-15M1, the part preceeding the hyphen indicates successively the township and range (T.25 N., R.43 E.) north and east of the Willamette base line and meridian. (Because all townships in Washington are north of the Willamette base line the letter "N", indicating north is omitted; and because most of the State is east of the Willamette meridian the letter "E" is sometimes omitted for those ranges east of the Willamette meridian, but "W" is always included when the range lies west of the Willamette meridian.) The first number following the hyphen indicates the section (sec.15) and the letter (M) given the 40-acre subdivision of the section as shown in figure 2. The last number (1) is the serial number of the well in that particular 40-acre tract. Thus, the first well recorded in the NW¼SW¼ sec.15, T.25 N., R.43 E., would have the number 25/43-15M1, and the second well would have the number 25/43-15M2 or 25/43E-15M2. See figure 2 below:

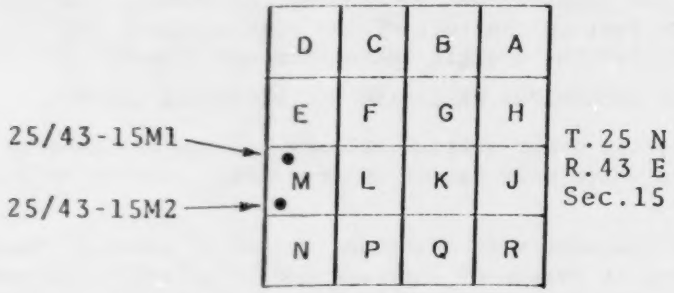


Figure 2. Local identifier well numbering system.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated into the network design. Areal configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict area variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and asses long-term changes in streamflow and stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are samples represent major drainage basins in the conterminous United States.

Tritium network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard text-books, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), stepbackwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some northern stream-gaging stations the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lake and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging station gives the location, drainage area, period of record, notations or revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from most accurate maps available. River mileage given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use, the datum of the present gage referred to National Geodetic Vertical Datum; and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum is explained in "DEFINITION OF TERMS" on page 7.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE", it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR: if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

Skeleton rating tables are published, immediately following EXTREMES, for stream-gaging stations where they serve a useful purpose and the dates of applicability can be easily identified.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharge are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published for all reservoirs for which records are published on a daily basis, but is not published for reservoirs for which only monthly data are given.

Data collected at partial-record stations follow the information for continuous record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of field data and computed results

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretations of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good", within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other data available

Information of a more detailed nature than that published for most of the gaging stations such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the district office. Also most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, pH, dissolved oxygen, water temperature, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, date of sampling and/or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on a following page.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight intake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diel temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

All temperature values in the daily tables are rounded to the nearest 0.5°C. Therefore, temperature values published in conjunction with water samples may be 0.1 to 0.2°C outside the range of the values published in the daily tables.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During period of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow is predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic network of observations wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs. See figures 1 and 2.

Measurements are made in many types of wells, under varying conditions of access and at different temperatures, hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either mean sea level (msl) or land-surface datum (lsd). Mean sea level is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in the well description. The height of the measuring point (MP) above or below land surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

HYDROLOGIC CONDITIONS

The annual mean yearly runoff in western Washington during the 1979 water year ranged generally from about 60 to 80 percent of average. Precipitation was deficient throughout western Washington from October to January except the area north of Seattle which was about normal during the month of November. Streamflows were similarily below normal for four months except during November in the area north of Seattle. Precipitation was about 150 percent of normal during February and most streamflows were above normal during the month. Precipitation and streamflows were then generally below normal for the remainder of the year except along the Cascade foothills and the western portion of the Olympic Pennisula which were near normal. Monthly and annual mean discharges are compared with medians at two gaging stations in figure 3. Chehalis River, a lowland stream in the southern portion of the region, had below normal runoff except for February, May and September and annual runoff was 69 percent of normal. Skykomish River, a mountainous stream of the northern Cascade Mountain range, had an annual runoff that was 78 percent of normal, and monthly flows were below normal except for November, March, and May.

The groundwater level in the key observation well in western Washington was below normal all year.

Usable storage in Ross Reservoir was above normal except during the months of January and February when it was drawn down to 70 and 60 percent of normal respectively. Usable storage in Lake Cushman was normal except during the December to February period when it was held at about 75 percent of normal. Usable storage in Lake Merwin was near normal all year.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Thirty-four manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 1200 South Eads Street, Arlington, VA 22202 (authorized agent of the Superintendent of Documents, Government Printing Office. Prices are effective October 1978 but are subject to change.

NOTE: When ordering any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations".

1-D1. *Water temperature-influential factors, field measurement, and data presentation,* by H. H. Stevens Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages. $1.60.

1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents,* by W.W.Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages. $0.85

2-D1. *Application of surface geophysics to ground-water investigations,* by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages. $1.90.

2-E1. *Application of borehole geophysics to water-resources investigations,* by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages. $1.75.

3-A1. *General field and office procedures for indirect discharge measurements,* by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages. $1.00.

3-A2. *Measurement of peak discharge by the slope-area method,* by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages. $0.35.

3-A3. *Measurement of peak discharge at culverts by indirect methods,* by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages. $0.40.

3-A4. *Measurement of peak discharge at width contractions by indirect methods,* by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages. $1.00.

3-A5. *Measurement of peak discharge at dams by indirect methods,* by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages. $0.35.

3-A6. *General procedure for gaging streams,* by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6, 1968, 13 pages. $1.00.

3-A7. *Stage measurements at gaging stations,* by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages. $1.40.

3-A8. *Discharge measurements at gaging stations,* by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages. $1.25.

3-A11. *Measurement of discharge by moving-boat method,* by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages. $1.20.

3-A12. *Fluorometric procedures for dye tracing,* by J. F. Wilson Jr.: USGS--TWRI Book 3, Chapter A12. 1968. 31 pages. $0.35. Not currently available.

3-B1. *Aquifer-test design, observation, and data analysis,* by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages. $0.70.

3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction,* by G. D. Bennett: USGS--TWRI Book 3, Chapter B2 1976. 172 pages. $2.50.

3-C1. *Fluvial sediment concepts,* by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages. $2.50.

3-C2. *Field methods for measurement of fluvial sediment,* by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2, 1970. 59 pages. $2.50.

3-C3. *Computation of fluvial-sediment discharge,* by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages. $2.10.

4-A1. *Some statistical tools in hydrology,* by H. C. Riggs: USGS--TWRI Book 4 Chapter A1. 1968. 39 pages. $1.60.

4-A2. *Frequency curves,* by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages. $1.20

4-B1. *Low-flow investigations,* by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972, 18 pages. $0.65.

4-B2. *Storage analyses for water supply,* by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages. $0.75.

4-B3. *Regional analyses of streamflow characteristics,* by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages. $0.65.

4-D1. *Computation of rate and volume of stream depletion by wells,* by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages. $1.10.

5-A1. *Methods for collection and analysis of water samples for dissolved minerals and gases,* by Eugene Brown, M. W. Skougstad, and M. J. Fishman: USGS--TWRI Book 5, Chapter A1. 1970. 160 pages. $2.40.

5-A2. *Determination of minor elments in water by emission spectroscopy,* by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages. $0.80.

5-A3. *Methods for analysis of organic substances in water,* by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages. $0.90.

5-A4.* *Methods for collection and analysis of aquatic biological and microbiological samples,* edited by P.E. Greeson, T.A. Ehlke, G.A. Irwin, B.W. Lium, and K.V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages. $20.00.

5-A5.* *Methods for determination of radioactive substances in water and fluvial sediments,* by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages. $16.00.

5-C1. *Laboratory theory and methods for sediment analysis,* by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages. $2.10.

7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments,* by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages. $2.30.

8-A1. *Methods of measuring water levels in deep wells,* by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages. $0.70.

8-B2. *Calibration and maintenance of vertical-axis type current meters,* by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages. $1.10.

*These publications are available ONLY from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. They are in looseleaf format and are subscription items. Additional supplements will be issued to subscribers at no extra cost. Checks should be made payable to Superintendent of Documents. Requester should emphasize to Superintendent of Documents that this is a subscription item.

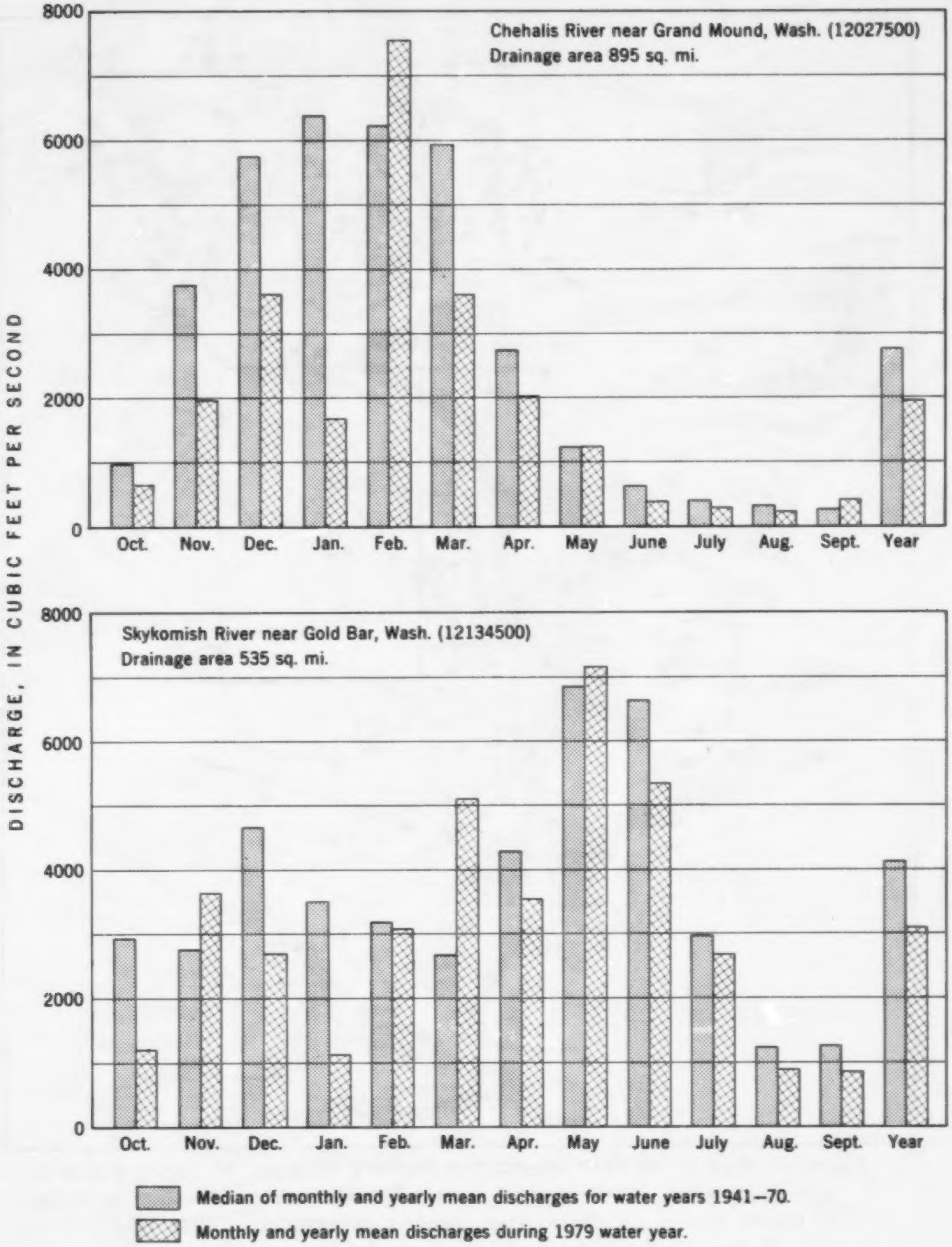
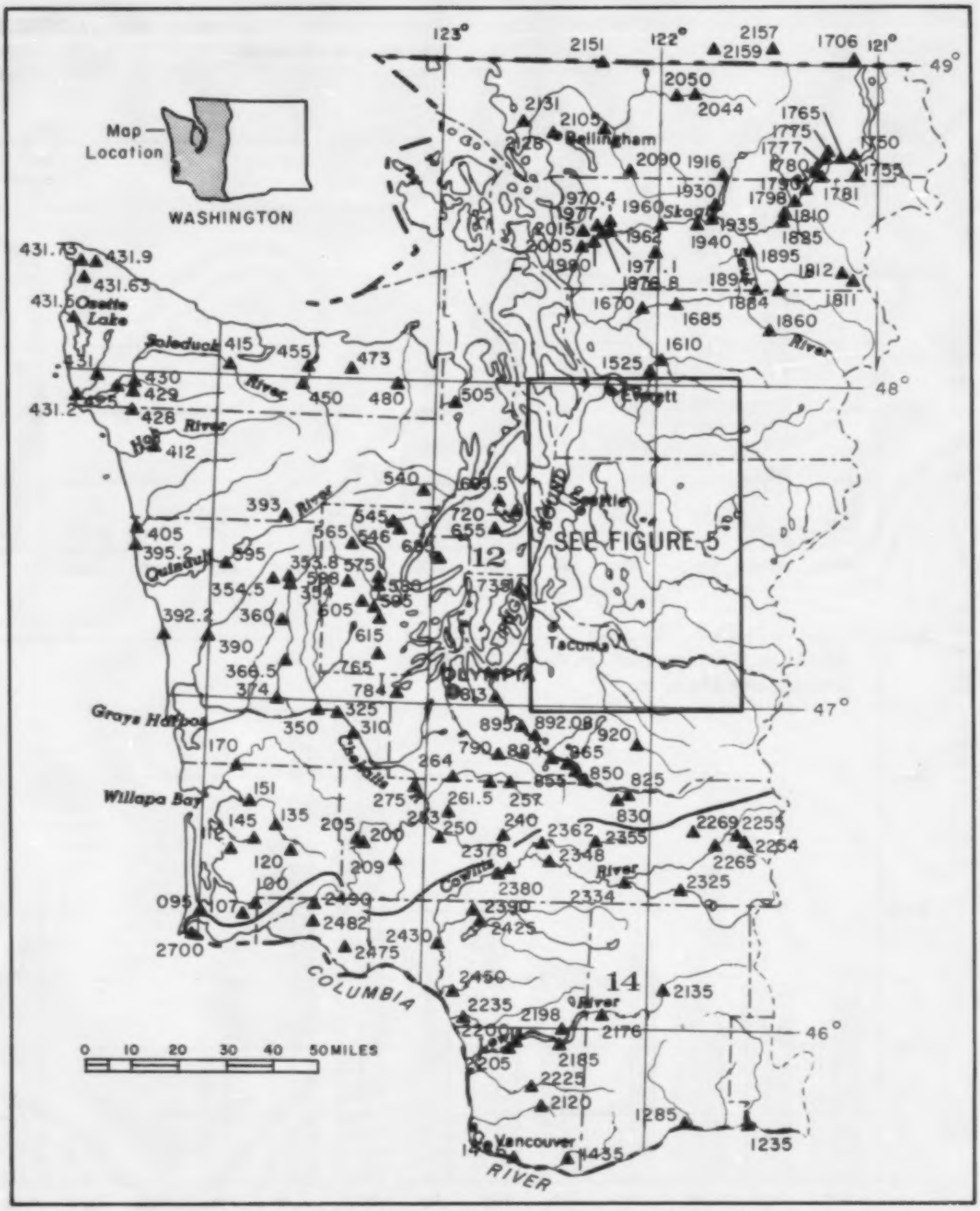


Figure 3. Discharge during 1979 water year compared with median discharge for period 1941–70 for two representative gaging stations.


Map Location
WASHINGTON
123°
122°
121°
49°
48°
47°
46°
Bellingham
Skagit
River
Everett
Seattle
SEE FIGURE 5
Tacoma
Olympia
12
14
Ozette Lake
Soleduck
River
Hoh River
Quinault
River
Grays Harbor
Chehalis
Willapa Bay
Cowlitz
River
COLUMBIA
RIVER
Lewis
Vancouver
0 10 20 30 40 50 MILES
2151
2157
2159
1706
2050
2044
2131
2105
2128
2090
1916
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1781
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1885
1895
1894
1884
1812
1811
1860
1930
1935
1940
1970.4
1977
1960
2015
2005
1962
1990
1971.1
1976.8
1670
1685
1610
1525
431.73
431.9
431.65
431.5
431
430
429
431.2
425
428
412
415
455
473
450
480
505
540
663.5
720
655
393
545
546
565
405
395.2
595
353.8
575
598
354.5
354
530
596
605
392.2
360
615
390
765
366.5
374
784
813
325
350
310
895
892.08
920
170
790
884
865
264
855
850
825
151
275
261.5
257
145
135
263
250
240
830
205
200
2362
2355
2269
2255
2254
2265
120
209
2378
2348
100
2380
2325
095
107
2490
2390
2334
2482
2425
2700
2475
2430
2450
2135
2235
2198
2176
2200
2185
2205
2225
2120
1285
1235
1445
1435

Figure 4. Map of Western Washington showing locations of gaging stations operated by the U.S. Geological Survey in cooperation with other agencies. Numbers shown are abbreviated versions of complete station numbers used in text. Part numbers are the large figures.

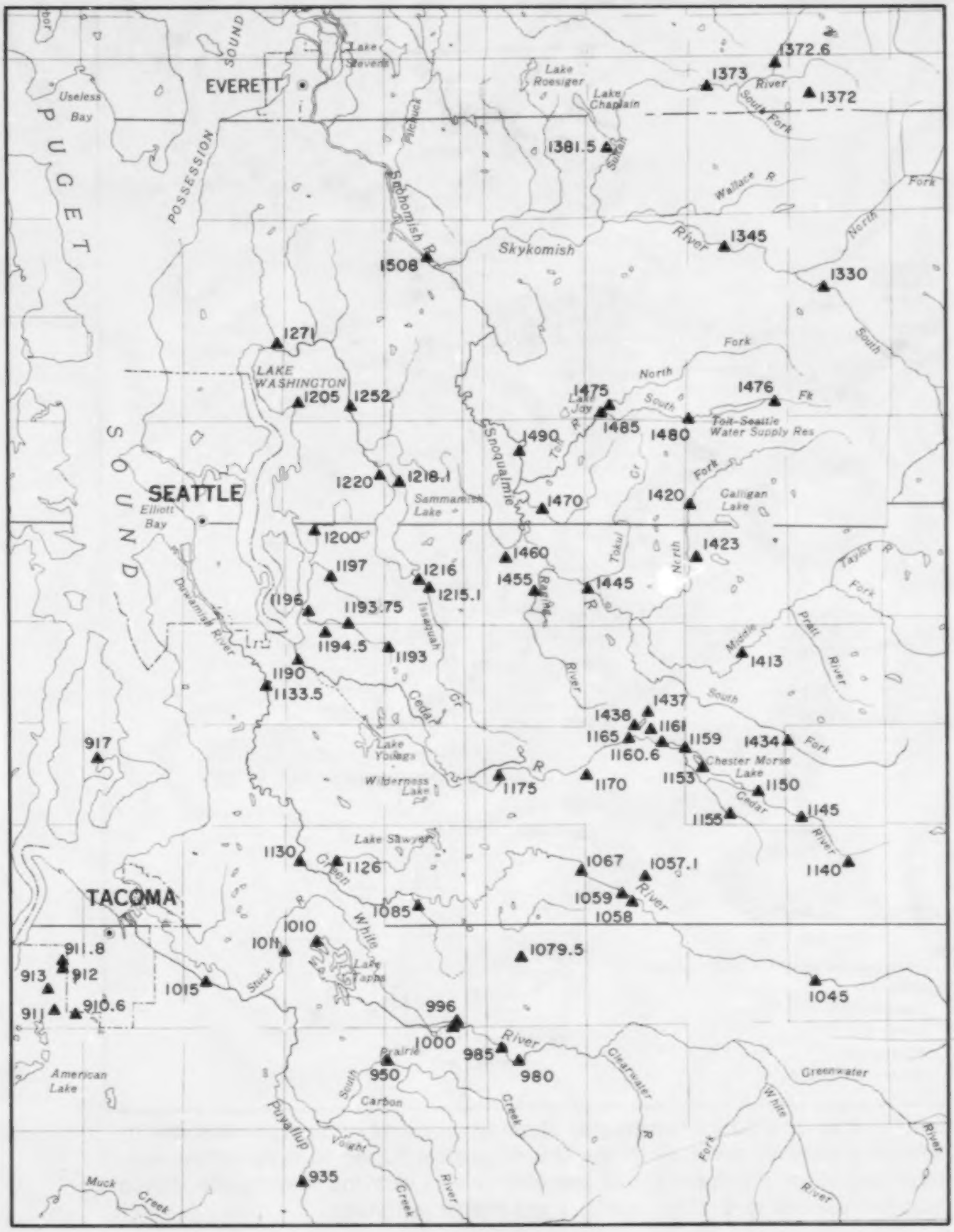
EVERETT
SEATTLE
TACOMA
PUGET SOUND
POSSESSION SOUND
Useless Bay
Elliott Bay
Lake Stevens
Lake Roesiger
Lake Chaplain
LAKE WASHINGTON
Sammamish Lake
Lake Youngs
Wilderness Lake
Lake Sawyer
Lake Tapps
American Lake
Chester Morse Lake
Calligan Lake
Lake Joy
Tolt-Seattle Water Supply Res
Snohomish R
Pilchuck
Sultan
Wallace R
Skykomish River
North Fork
South Fork
Snoqualmie River
Tolt R
Tokul Cr
Raging R
Taylor R
Pratt River
Middle Fork
Issaquah Cr
Cedar R
Duwamish River
Green River
White River
Stuck R
Puyallup
Carbon
Voight Creek
Clearwater R
Greenwater
Muck Creek
Prairie
1372.6
1373
1372
1381.5
1345
1330
1508
1271
1205
1252
1475
1476
1485
1480
1490
1220
1218.1
1470
1420
1200
1460
1423
1197
1216
1455
1445
1215.1
1196
1193.75
1194.5
1193
1413
1190
1133.5
1437
1438
1161
1165
1159
1434
1160.6
1153
917
1175
1170
1150
1145
1155
1140
1130
1126
1067
1057.1
1059
1058
1085
1010
1011
1079.5
911.8
913
912
1015
1045
911
910.6
996
1000
985
950
980
935

Figure 5. Map showing locations of gaging stations in the insert of Figure 4.

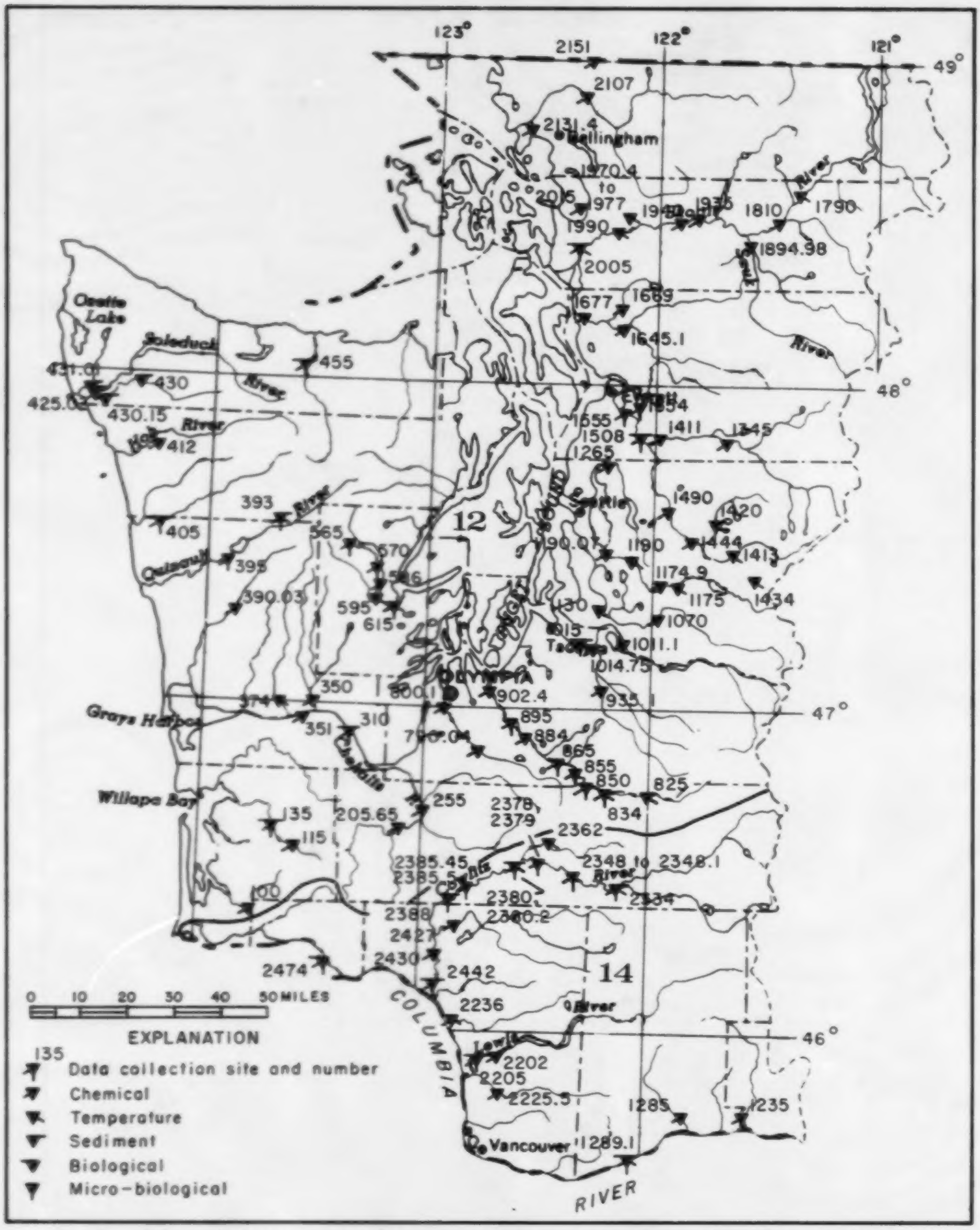
123°
122°
121°
49°
48°
47°
46°
2151
2107
2131.4
Bellingham
1970.4 to 1977
2015
1990
1940
1935
1810
1790
1894.98
2005
1677
1669
1645.1
River
Ozette Lake
Soleduck
River
455
431.01
430
425.02
430.15
River
412
393
405
395
390.03
565
570
586
595
615
12
Everett
1655
1654
1508
1411
1345
1265
Seattle
1490
1420
1444
1413
190.07
1190
1174.9
1175
1434
1130
1070
1015
Tacoma
1011.1
1014.75
350
374
800.1
Olympia
902.4
935.1
Grays Harbor
351
310
790.04
895
884
865
855
850
825
834
Willapa Bay
135
115
205.65
255
2378
2379
2362
2385.45
2385.5
2348 to 2348.1
River
2334
2380
2380.2
2388
2427
2430
2442
14
2474
100
0 10 20 30 40 50 MILES
COLUMBIA
2236
River
Lewis
2202
2205
2225.5
1285
1235
Vancouver
1289.1
RIVER
EXPLANATION
135 Data collection site and number
Chemical
Temperature
Sediment
Biological
Micro-biological

Figure 6. Map of Western Washington showing locations of surface-water-quality sampling stations operated by the U.S. Geological Survey in cooperation with other agencies. Numbers shown are abbreviated versions of complete station number used in text. Part numbers are the large figures.

12010000 NASELLE RIVER NEAR NASELLE, WA

LOCATION.--Lat 46°22'27", long 123°44'32", in SW¼SW¼ sec.1, T.10 N., R.9 W., Pacific County, Hydrologic Unit 17100106, on right bank 0.1 mi (0.2 km) upstream from county highway bridge, 2.2 mi (3.5 km) upstream from Salmon Creek, 3.4 mi (5.5 km) east of Naselle and at mile 17.4 (28.0 km).

DRAINAGE AREA.--54.8 mi^2 (141.9 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1929 to current year.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1930(M), 1932-40(M), 1945-46(M).

GAGE.--Water-stage recorder. Altitude of gage is 24 ft (7.3 m), by barometer. Prior to Jan. 11, 1957, nonrecording gage and crest-stage gage at site 1,350 ft (411 m) downstream at present datum. Jan. 11, 1957, to Dec. 31, 1961, nonrecording gage and crest-stage gage at site 1,200 ft (366 m) downstream at present datum.

REMARKS.--Water-discharge records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--50 years, 431 ft^3/s (12.21 m^3/s) 106.81 in/yr (2,713 mm/yr), 312,300 acre-ft/yr (385 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,100 ft^3/s (314 $^3/s$) Jan. 22, 1935, from flood marks at site then in use, from rating curve extended above 4,000 ft^3/s (113 m^3/s) on basis of slope-area measurement at gage height 15.2 ft (4.63 m); maximum gage height, 16.20 ft (4.938 m) Dec. 2, 1977; minimum, 18 ft^3/s (0.51 m^3/s) Aug. 30, 31, Sept. 1, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 4,000 ft^3/s (113 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Feb. 6	2300	4,570	129	11.82	3.603	Mar. 4	2400	*5,000	142	*12.38	3.773

Minimum discharge, 28 ft^3/s (0.79 m^3/s) Aug. 13, 18, gage height, 3.72 ft (1.134 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	277	100	970	261	174	886	193	152	85	134	33	32
2	252	111	695	234	163	675	228	145	82	95	34	45
3	231	240	620	219	179	595	216	137	79	74	34	213
4	213	620	620	204	237	2390	213	179	76	64	33	188
5	199	358	540	188	745	3570	196	490	96	59	32	137
6	185	270	470	177	1910	1810	182	514	85	55	32	104
7	174	243	410	168	2740	1200	168	470	76	52	31	85
8	166	350	368	160	1350	860	182	406	71	53	31	129
9	158	277	382	158	1620	675	204	368	67	50	30	261
10	158	246	434	267	1350	535	228	322	64	86	30	163
11	182	225	615	204	1250	458	294	287	63	82	29	122
12	147	207	615	199	1870	392	494	261	61	78	29	100
13	137	190	518	216	2170	350	750	240	62	65	29	85
14	127	177	560	210	1320	310	555	219	61	59	30	77
15	122	182	490	204	892	298	446	202	59	54	32	70
16	122	892	442	193	715	264	392	190	84	50	30	66
17	117	1040	482	188	1220	243	368	177	79	47	29	62
18	111	745	442	177	1500	225	361	168	71	45	31	58
19	106	845	396	185	1100	207	340	155	70	44	50	56
20	108	650	371	284	815	196	312	145	66	43	69	55
21	102	526	385	600	655	185	284	137	61	43	45	54
22	98	442	478	458	535	174	261	129	57	42	45	51
23	95	385	514	378	494	163	243	124	56	41	37	49
24	104	350	725	329	1310	155	225	120	52	40	36	48
25	93	322	620	291	2820	150	210	113	50	40	32	46
26	89	298	510	267	2260	150	196	111	48	39	30	46
27	85	280	438	255	1650	145	185	115	47	38	30	46
28	89	322	382	228	1220	137	182	124	46	37	29	52
29	160	315	336	213	---	145	168	108	46	36	29	47
30	137	790	301	196	---	158	158	96	59	36	30	51
31	111	---	273	185	---	166	---	91	---	34	31	---
TOTAL	4456	11998	15602	7496	34264	17867	8434	6495	1979	1715	1050	2598
MEAN	144	400	503	242	1224	576	281	210	66.0	55.3	33.9	86.6
MAX	277	1040	970	600	2820	3570	750	514	96	134	69	261
MIN	85	100	273	158	163	137	158	91	46	34	29	32
CFSM	2.63	7.30	9.18	4.42	22.3	10.5	5.13	3.83	1.20	1.01	.62	1.58
IN.	3.02	8.14	10.59	5.09	23.26	12.13	5.73	4.41	1.34	1.16	.71	1.76
AC-FT	8840	23800	30950	14870	67900	35440	16730	12880	3930	3400	2080	5150

CAL YR 1978 TOTAL 115162 MEAN 316 MAX 1710 MIN 37 CFSM 5.77 IN 78.17 AC-FT 228400
WTR YR 1979 TOTAL 113954 MEAN 312 MAX 3570 MIN 29 CFSM 5.69 IN 77.35 AC-FT 226000

12010000 NASELLE RIVER NEAR NASELLE, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples taken 1,350 ft (411 m) downstream from gaging station.

PERIOD OF RECORD.--Water years 1963-73, 1976 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1963 to September 1973.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM COBALT UNITS)	TURBIDITY (NTU)
NOV , 1978							
14...	1115	177	58	7.5	2.6	5	.00
JAN , 1979							
25...	1240	291	53	7.3	3.7	5	1.0
MAR							
15...	0835	312	45	7.3	8.4	10	1.0
MAY							
09...	1015	375	52	7.5	9.2	10	1.0
JUL							
26...	1440	38	61	7.7	18.3	5	.00
SEP							
18...	1230	58	62	7.5	17.2	10	.00

DATE	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
NOV , 1978							
14...	13.3	34	.49	.01	.010	.00	.00
JAN , 1979							
25...	13.0	18	.73	.00	.010	.00	.00
MAR							
15...	11.9	76	.58	.01	.020	.04	.12
MAY							
09...	11.6	15	.56	.01	.010	.01	.03
JUL							
26...	9.8	31	.13	.02	.010	.01	.03
SEP							
18...	9.8	120	.18	.04	.010	.01	.03

12011500 WILLAPA RIVER AT LEBAM, WA

LOCATION.--Lat 46°33'50", long 123°33'49", in SW¼SW¼ sec.33, T.13 N., R.7 W., Pacific County, Hydrologic Unit 17100106, at former gaging station 0.1 mi (0.2 km) downstream from bridge on State Highway 6, 0.5 mi (0.8 km) west of Lebam, 1.0 mi (1.6 km) upstream from Walker Creek, and at mile 33.9 (54.6 km).

DRAINAGE AREA.--41.4 mi² (107.2 km²).

PERIOD OF RECORD.--Water years 1952-71, October 1977 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES March 1952 to September 1971.

REMARKS.--Water-discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978 09...	1235	35	69	7.2	13.7	50	2.0
NOV 06...	1125	104	74	6.9	6.8	20	2.0
DEC 04...	1150	243	67	6.9	7.8	30	4.0
JAN , 1979 29...	1330	75	58	7.4	1.1	15	2.0
FEB 20...	1220	472	63	6.5	5.8	15	6.0
MAR 12...	1150	178	61	7.0	7.6	35	4.0
APR 16...	1230	217	62	7.1	7.8	20	3.0
MAY 21...	1140	47	70	7.3	12.3	30	4.0
JUN 18...	1130	20	69	7.2	13.1	40	2.0
JUL 09...	1205	12	75	7.3	16.7	60	4.0
AUG 06...	1200	6.4	76	7.2	15.5	45	3.0
SEP 04...	1135	5.4	72	6.8	14.0	95	5.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978 09...	9.3	.40	.01	.030	.01	.03
NOV 06...	11.5	1.7	.01	.030	.00	.00
DEC 04...	11.5	1.7	.04	.030	.01	.03
JAN , 1979 29...	14.2	1.2	.06	.020	.01	.03
FEB 20...	12.2	1.7	.02	.010	.01	.03
MAR 12...	11.5	1.3	.08	.020	.00	.00
APR 16...	11.7	1.3	.01	.010	.05	.15
MAY 21...	11.4	.64	.06	.020	.00	.00
JUN 18...	10.6	.37	.03	.010	.00	.00
JUL 09...	8.9	.30	.03	.040	.00	.00
AUG 06...	8.4	.32	.03	.040	.00	.00
SEP 04...	9.9	.77	.03	.250	.01	.03

12013500 WILLAPA RIVER NEAR WILLAPA, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 46°39'04", long 123°39'05", in SW¼SW¼ sec.35, T.14 N., R.8 W., Pacific County, Hydrologic Unit 17100106, on right bank 2,150 ft (655 m) downstream from Mill Creek, 1.8 mi (2.9 km) southeast of Willapa, and at mile 17.8 (28.6 km).

DRAINAGE AREA.--130 mi² (337 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August to October 1947, July 1948 to December 1954, water years 1955-56, 1958-59 (annual maximum), April 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3.57 ft (1.088 m) National Geodetic Vertical Datum of 1929. Aug. 26 to Oct. 16, 1947, water-stage recorder at site 2,060 ft (628 m) upstream at different datum. July 28, 1948 to Dec. 2, 1954, water-stage recorder, water years 1955-56, 1958-59, nonrecording gage and Apr.1, 1961 to Apr. 14, 1974, water-stage recorder at site 2,000 ft (610 m) upstream at datum 2.12 ft (0.646 m) higher.

REMARKS.--Water-discharge records good. Some diversion for domestic use and irrigation above station. No regulation.

AVERAGE DISCHARGE.--24 years (water years 1949-1954, 1962-1979), 649 ft³/s (18.38 m³/s), 67.80 in/yr (1,722 mm/yr), 470,200 acre-ft/yr (580 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,400 ft³/s (323 m³/s) Feb. 22, 1949, Dec. 13, 1966, from rating curve extended above 7,300 ft³/s (207 m³/s); maximum gage height, 24.22 ft (7.382 m) Feb. 22, 1949, site and datum then in use; minimum discharge, 13 ft³/s (0.37 m³/s) Aug. 20, 1967, minimum gage height, 2.87 ft (0.875 m) Aug. 18-21, 23-25, 31, Sept. 1, 1970, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (142 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 7	0300	unknown	----	unknown	---	Mar. 5	0400	*7,660	217	*17.88	5.450

Minimum discharge, 24 ft³/s (0.68 m³/s) Aug. 10, gage height, 3.13 ft (0.954 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	271	122	1770	340	250	1570	270	235	115	138	33	44
2	242	115	1250	320	236	1200	341	225	110	140	30	67
3	224	211	956	297	249	1010	365	213	105	101	30	204
4	208	964	863	279	321	2920	327	236	105	82	30	262
5	194	525	740	259	856	5700	300	574	130	73	30	156
6	183	374	628	250	2280	2750	276	698	115	67	29	123
7	173	311	552	240	4680	1870	254	720	98	63	27	98
8	166	401	491	227	2100	1380	254	588	91	63	27	136
9	157	324	513	223	2230	1080	306	536	86	62	26	411
10	156	281	489	379	1860	894	351	455	84	95	25	243
11	168	253	859	314	1750	750	457	406	82	105	27	172
12	154	236	722	275	2540	656	529	366	82	95	27	135
13	142	217	633	290	3310	577	780	335	81	80	26	114
14	136	202	701	287	2220	512	820	307	81	72	30	100
15	130	197	669	290	1680	505	760	279	80	64	37	90
16	130	697	610	271	1290	449	675	261	92	58	37	84
17	129	928	769	261	2080	412	664	244	98	52	34	79
18	124	700	737	250	3040	376	646	231	95	49	33	74
19	118	984	650	246	2180	348	609	218	94	47	55	70
20	114	771	590	297	1620	326	562	203	87	45	118	69
21	114	626	571	615	1260	307	505	191	81	43	80	68
22	110	537	626	506	1820	289	456	179	76	42	84	65
23	107	475	623	409	937	270	412	165	73	41	65	63
24	109	452	777	366	1450	256	373	155	71	40	57	60
25	107	447	696	331	4310	248	343	150	66	39	52	58
26	103	438	605	312	3590	244	310	155	62	38	48	57
27	98	418	538	337	2710	240	295	160	59	38	45	56
28	97	508	473	327	2060	237	277	170	58	38	44	62
29	159	496	430	297	---	236	268	150	59	36	42	62
30	176	1120	400	277	---	244	244	135	61	36	41	60
31	137	---	370	259	---	246	---	125	---	34	43	---
TOTAL	4636	14330	21301	9631	54029	28110	13029	9065	2577	1976	1312	3342
MEAN	150	478	687	311	1930	907	434	292	85.9	63.7	42.3	111
MAX	271	1120	1770	615	4680	5700	820	720	130	140	118	411
MIN	97	115	370	223	236	236	244	125	58	34	25	44
CFSM	1.15	3.68	5.29	2.39	14.8	6.98	3.34	2.25	.66	.49	.33	.85
IN.	1.33	4.10	6.10	2.76	15.46	8.04	3.73	2.59	.74	.57	.38	.96
AC-FT	9200	28420	42250	19100	107200	55760	25840	17980	5110	3920	2600	6630

CAL YR 1978 TOTAL 154976 MEAN 425 MAX 2570 MIN 32 CFSM 3.27 IN 44.35 AC-FT 307400
WTR YR 1979 TOTAL 163338 MEAN 448 MAX 5700 MIN 25 CFSM 3.45 IN 46.74 AC-FT 324000

12013500 WILLAPA RIVER NEAR WILLAPA, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966-1973, 1976 to current year.

REMARKS.--NASQAN water-quality sampling began on Apr. 16, 1979.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology for other than NASQAN water-quality samples.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT , 1978												
09...	1120	157	65	7.1	13.7	40	2.0	9.2	--	--	--	--
NOV												
06...	1045	370	69	7.0	7.2	20	2.0	11.4	--	--	--	--
DEC												
04...	1120	848	64	6.9	8.3	25	4.0	11.5	--	--	--	--
JAN , 1979												
29...	1235	295	70	7.3	1.8	15	2.0	14.3	--	--	--	--
FEB												
20...	1115	1600	62	6.7	6.0	5	8.0	12.2	--	--	--	--
MAR												
12...	1115	656	61	7.0	7.9	30	3.0	11.6	--	--	--	--
APR												
16...	1150	644	61	7.2	8.2	15	3.0	11.6	--	--	--	--
16...	1430	656	57	7.2	8.6	--	4.2	11.4	K120	20	16	8
MAY												
09...	1700	512	47	7.6	12.0	--	1.9	11.2	230	45	15	5
21...	1100	191	69	7.3	14.1	25	3.0	11.1	--	--	--	--
JUN												
18...	1050	95	70	7.2	14.0	40	2.0	10.2	--	--	--	--
28...	0930	58	73	7.3	16.3	--	1.5	8.6	K690	58	22	6
JUL												
09...	1110	62	74	7.3	17.5	50	3.0	9.0	--	--	--	--
26...	1700	38	82	7.4	20.6	--	1.7	9.2	110	23	21	0
AUG												
06...	1130	29	84	7.2	17.2	30	2.0	8.5	--	--	--	--
28...	1145	44	74	7.3	17.6	--	1.0	8.9	130	62	21	3
SEP												
04...	1045	241	69	7.1	14.4	65	9.0	8.8	--	--	--	--
18...	1400	76	69	7.4	19.0	--	1.5	9.6	220	730	20	0

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT , 1978											
09...	--	--	--	--	--	--	--	--	--	--	--
NOV											
06...	--	--	--	--	--	--	--	--	--	--	--
DEC											
04...	--	--	--	--	--	--	--	--	--	--	--
JAN , 1979											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB											
20...	--	--	--	--	--	--	--	--	--	--	--
MAR											
12...	--	--	--	--	--	--	--	--	--	--	--
APR											
16...	--	--	--	--	--	--	--	--	--	--	--
16...	4.1	1.4	5.4	41	.6	.5	8	15	4.6	.0	14
MAY											
09...	3.7	1.3	5.0	41	.6	.6	10	4.3	5.2	.0	13
21...	--	--	--	--	--	--	--	--	--	--	--
JUN											
18...	--	--	--	--	--	--	--	--	--	--	--
28...	5.5	1.9	7.3	41	.7	.8	16	12	5.5	.0	16
JUL											
09...	--	--	--	--	--	--	--	--	--	--	--
26...	5.5	1.8	6.7	50	.6	.7	24	1.6	5.2	.1	15
AUG											
06...	--	--	--	--	--	--	--	--	--	--	--
28...	5.5	1.8	6.4	39	.6	.8	18	6.3	6.6	.1	13
SEP											
04...	--	--	--	--	--	--	--	--	--	--	--
18...	5.4	1.6	6.3	39	.6	.8	20	9.7	5.0	.0	14

K Results based upon colony counts outside the ideal range.

12013500 WILLAPA RIVER NEAR WILLAPA, WA--Continued

WATER QUALITY DATA

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)
OCT , 1978											
09...	--	--	--	--	.40	.02	--	--	--	--	--
NOV											
06...	--	--	--	--	1.3	.01	--	--	--	--	--
DEC											
04...	--	--	--	--	1.3	.02	--	--	--	--	--
JAN , 1979											
29...	--	--	--	--	.94	.08	--	--	--	--	--
FEB											
20...	--	--	--	--	1.4	.01	--	--	--	--	--
MAR											
12...	--	--	--	--	1.1	.02	--	--	--	--	--
APR											
16...	--	--	--	--	1.1	.01	--	--	--	--	--
16...	49	50	.07	86.8	1.0	.01	.17	.18	.10	.08	1.2
MAY											
09...	48	39	.07	66.4	.75	.00	.14	.14	.12	.02	.89
21...	--	--	--	--	.58	.03	--	--	--	--	--
JUN											
18...	--	--	--	--	.28	.05	--	--	--	--	--
28...	56	59	.08	8.77	.37	.05	.57	.62	.32	.30	.99
JUL											
09...	--	--	--	--	.26	.05	--	--	--	--	--
26...	55	51	.07	5.64	.28	.03	.20	.23	.06	.17	.51
AUG											
06...	--	--	--	--	.32	.03	--	--	--	--	--
28...	56	51	.08	6.65	.12	.12	.61	.73	.63	.10	.85
SEP											
04...	--	--	--	--	.47	.03	--	--	--	--	--
18...	55	56	.07	11.0	.88	.12	.28	.40	.01	.39	1.3

DATE	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1978											
09...	--	.030	--	.02	.06	--	--	--	--	--	--
NOV											
06...	--	.020	--	.00	.00	--	--	--	--	--	--
DEC											
04...	--	.040	--	.00	.00	--	--	--	--	--	--
JAN , 1979											
29...	--	.020	--	.00	.00	--	--	--	--	--	--
FEB											
20...	--	.020	--	.01	.03	--	--	--	--	--	--
MAR											
12...	--	.010	--	.00	.00	--	--	--	--	--	--
APR											
16...	--	.010	--	.05	.15	--	--	--	--	--	--
16...	5.2	.010	.010	--	--	--	1.8	.4	8	14	83
MAY											
09...	3.9	.010	.010	--	--	3.2	--	--	5	6.9	75
21...	--	.020	--	.00	.00	--	--	--	--	--	--
JUN											
18...	--	.000	--	.00	.00	--	--	--	--	--	--
28...	4.4	.020	.010	--	--	3.0	--	--	4	.63	90
JUL											
09...	--	.020	--	.01	.03	--	--	--	--	--	--
26...	2.3	.030	.040	--	--	--	3.0	.3	6	.62	88
AUG											
06...	--	.030	--	.00	.00	--	--	--	--	--	--
28...	3.8	.040	.020	--	--	3.3	--	--	4	.48	97
SEP											
04...	--	.030	--	.01	.03	--	--	--	--	--	--
18...	5.7	.020	.020	--	--	3.6	--	--	3	.60	97

12013500 WILLAPA RIVER NEAR WILLAPA, WA--Continued

WATER QUALITY DATA

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
APR , 1979										
16...	1430	0	0	0	0	10	2	0	2	0
JUL										
26...	1700	1	1	0	0	9	0	0	<1	0

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)
APR , 1979										
16...	0	0	0	0	<3	11	9	2	820	750
JUL										
26...	0	0	0	0	<3	2	1	1	390	160

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)
APR , 1979										
16...	70	130	130	2	20	10	7	.1	.1	.0
JUL										
26...	230	11	11	0	20	10	10	1.7	1.7	.0

DATE	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
APR , 1979									
16...	0	0	0	0	0	0	30	30	4
JUL									
26...	0	0	0	0	0	0	30	30	<3

DATE	TIME	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
JUN , 1979						
28...	0930	8.66	9.92	13.5	5.85	50
JUL						
26...	1700	1.65	1.73	3.00	2.41	28

12013500 WILLAPA RIVER NEAR WILLAPA, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE TIME	MAY 9,79 1700	JUN 28,79 0930	JUL 25,79 1700	AUG 28,79 1145	SEP 18,79 1400
TOTAL CELLS/ML	100	120	0	1100	510
DIVERSITY: DIVISION	0.6	0.0	0.0	0.4	1.0
.CLASS	0.6	0.0	0.0	0.4	1.0
..ORDER	0.6	0.5	0.0	0.5	1.0
...FAMILY	1.7	0.5	0.0	2.1	2.7
....GENUS	1.7	0.5	0.0	2.2	2.9

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHARACIACEAE										
....CHARACIUM	14	14	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	43	4	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	100#	89	--	-	43	4	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	13	11	--	-	--	-	--	-
...VOLVOCACEAE										
....GONIUM	--	-	--	-	--	-	--	-	140#	27
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	--	-	11	1	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	610#	54	96#	19
....COCCONEIS	--	-	--	-	--	-	--	-	14	3
....RHOICOSPHENIA	--	-	--	-	--	-	21	2	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	21	2	55	11
...FRAGILARIACEAE										
....SYNEDRA	14	14	--	-	--	-	11	1	14	3
...GOMPHONEMATACEAE										
....GOMPHONEMA	58#	57	--	-	--	-	190#	17	110#	22
...NAVICULACEAE										
....NAVICULA	14	14	--	-	--	-	96	8	14	3
....NEIDIUM	--	-	--	-	--	-	--	-	14	3
...NITZSCHIACEAE										
....NITZSCHIA	--	-	--	-	--	-	85	8	27	5
...SURIRELLACEAE										
....SURIRELLA	--	-	--	-	--	-	--	-	14	3
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	--	-	14	3

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

12017315 CANNERY SLOUGH TRIBUTARY NEAR TOKELAND, WA

LOCATION.--Lat 46°43'44", long 124°02'17", in SW¼NW¼ sec.3, T.14 N., R.11 W., Pacific County, on right bank 150 ft (46 m) upstream from State Highway 105, and 3.1 mi (5.0 km) northeast of Tokeland.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1978 to December 1979 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (6 m) from topographic map.

REMARKS.--Water-discharge records fair. No regulation or diversion above station.

EXTREMES FOR CURRENT PERIOD.--November 1978 to September 1979: Maximum discharge during period, 12 ft^3/s (0.34 m^3/s) Feb. 17, gage height, 1.62 ft (0.494 m); minimum, 0.31 ft^3/s (0.009 m^3/s) July 29, 30, Sept. 7, gage height, 0.77 ft (0.235 m).

October to December 1979: Maximum discharge during period, 18 ft^3/s (0.51 m^3/s) Dec. 1, gage height, 1.74 ft (0.530 m); minimum, 0.58 ft^3/s (0.016 m^3/s) Oct. 19, 20, gage height, 0.86 ft (0.262 m).

DISCHARGE, IN CUBIC FEET PER SECOND, NOVEMBER 1978 TO DECEMBER 1979

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	.84	.62	.66	1.6	.99	.82	.70	1.1	.44	.62
2		---	.68	.62	.66	1.3	1.0	.82	.70	.74	.46	.64
3		---	1.6	.62	1.1	1.9	1.0	.82	.70	.54	.47	.82
4		---	.99	.65	1.1	4.9	1.2	1.4	.71	.53	.51	.56
5		---	.76	.67	2.3	2.8	.98	1.4	.82	.46	.53	.66
6		---	.74	.66	3.9	2.0	.94	.99	.73	.40	.52	.52
7		---	.75	.63	1.6	1.6	.91	1.3	.70	.44	.48	.41
8		---	.78	.65	1.2	1.6	1.1	.98	.70	.47	.49	.48
9		---	1.2	.74	1.3	1.5	1.1	.91	.70	.51	.48	.43
10		---	1.3	2.1	1.8	1.3	1.4	.86	.69	.61	.53	.39
11		---	.95	.73	1.8	1.1	1.1	.82	.67	.62	.51	.40
12		---	.76	.73	5.1	1.1	1.6	.82	.67	.56	.52	.38
13		---	.68	.70	1.7	1.1	1.2	.84	.69	.52	.51	.42
14		---	.94	.77	1.3	1.0	1.1	.82	.67	.51	.54	.49
15		---	.72	.74	1.4	1.2	1.0	.82	.68	.50	.54	.55
16		---	.72	.74	1.7	1.1	.99	.82	.77	.50	.51	.55
17		---	.78	.74	3.6	1.1	.98	.82	.73	.53	.52	.58
18		---	.74	.74	2.2	1.0	.99	.82	.69	.54	.65	.59
19		---	.70	1.0	2.3	1.0	1.3	.82	.69	.56	.57	.60
20		---	.72	1.6	2.0	1.0	1.0	.82	.67	.55	.54	.59
21		.74	.71	1.1	2.1	1.0	.94	.82	.67	.52	.60	.59
22		.74	.73	.75	2.2	.97	.94	.78	.67	.50	.57	.59
23		.70	.87	.71	2.2	.94	.91	.74	.67	.54	.54	.58
24		.70	.91	.70	2.9	.94	.86	.74	.65	.54	.54	.59
25		.74	.75	.66	3.5	.97	.82	.73	.64	.55	.53	.62
26		.74	.70	.70	2.2	1.0	.82	.69	.62	.50	.55	.68
27		1.1	.72	.93	2.2	1.0	.82	.72	.64	.49	.59	.67
28		.90	.70	.75	1.6	.96	.82	.74	.65	.46	.58	.70
29		.94	.67	.72	---	.94	.82	.69	.65	.43	.58	.70
30		2.4	.66	.70	---	.95	.82	.70	.71	.33	.56	.70
31		---	.63	.68	---	.94	---	.70	---	.40	.56	---
TOTAL	---	---	25.40	24.85	57.62	41.81	30.45	26.57	20.65	16.45	16.52	17.10
MEAN	---	---	.82	.80	2.06	1.35	1.02	.86	.69	.53	.53	.57
MAX	---	---	1.6	2.1	5.1	4.9	1.6	1.4	.82	1.1	.65	.82
MIN	---	---	.63	.62	.66	.94	.82	.69	.62	.33	.44	.38
AC-FT	---	---	50	49	114	83	60	53	41	33	33	34

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR 1980

Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.
1	0.69	0.78	4.5	7	0.70	0.78	13	0.74	0.78	19	0.62	0.94	25	1.6	1.4
2	.69	.94	1.4	8	.70	.78	14	.74	.78	20	1.2	.88	26	1.2	1.8
3	.70	1.4	1.3	9	.70	.78	15	.75	.82	21	.88	.67	27	1.1	.79
4	.70	1.8	1.1	10	.70	.78	16	.94	.88	22	.78	1.7	28	1.3	.78
5	.70	1.1	---	11	.70	.78	17	.95	1.0	23	.74	1.5	29	.94	.79
6	.70	.82	---	12	.74	.78	18	.82	1.1	24	2.1	.99	30	.88	.82
													31	.82	---

	Oct.	Nov.
TOTAL	27.52	29.94
MEAN	.89	1.00
MAX	2.1	1.8
MIN	.62	.67
AC-FT	55	59

12017315 CANNERY SLOUGH TRIBUTARY NEAR TOKELAND, WA--Continued

WATER QUALITY RECORDS

DRAINAGE AREA.--0.17 mi² (0.44 km²).

PERIOD OF RECORD.--February 1978 to May 1979 (discontinued).

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
NOV , 1978							
29...	0945	.94	119	7.0	7.8	11.6	19
JAN , 1979							
31...	0915	.68	116	7.0	2.4	13.1	5
MAR							
28...	1020	.96	110	7.1	7.4	11.0	<1
MAY							
23...	0950	.74	121	6.9	10.4	10.1	K10

DATE	TIME	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	BICAR-BONATE (MG/L AS HCO3)
NOV , 1978									
29...	0945	18	2	3.0	2.5	17	66	1.8	19
JAN , 1979									
31...	0915	13	0	2.7	1.5	16	71	1.9	--
MAY									
23...	0950	18	5	2.9	2.5	16	80	1.7	15

DATE	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)
NOV , 1978								
29...	0	16	3.0	8.9	25	--	--	--
JAN , 1979								
31...	--	14	--	5.3	19	--	--	--
MAY								
23...	0	12	3.0	14	19	63	.09	.13

DATE	TIME	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
NOV , 1978												
29...	0945	.73	.01	.74	.02	.46	.48	1.2	5.4	.020	.01	.03
MAY , 1979												
23...	0950	.82	.00	.82	.04	.33	.37	1.2	5.3	.030	.00	.00

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAY , 1979											
23...	0950	0	0	0	10	0	0	.1	0	0	0

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)
MAY , 1979												
23...	0950	.0	.00	.0	.00	.00	.00	.37	.00	.00	.00	.00

DATE	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)
MAY , 1979											
23...	.00	.00	.00	.00	.00	.00	.00	.00	.39	0	.00

12017330 PACIFIC COUNTY DRAINAGE DITCH NO. 1 NEAR TOKELAND, WA

LOCATION.--Lat 46°44'08", long 124°03'56", in NE¼NE¼ sec.5, T.14 N., R.11 W., Pacific County, at Smith-Anderson Road, 4.1 mi (6.6 km) northeast of Tokeland.

DRAINAGE AREA.--5.13 mi² (13.29 km²).

PERIOD OF RECORD.--February 1978 to May 1979 (discontinued).

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
NOV , 1978							
29...	1030	17	283	6.8	8.0	6.6	K170
JAN , 1979							
31...	1025	9.6	250	6.9	2.4	7.7	180
MAR							
28...	1100	10	265	7.0	9.2	6.3	250
MAY							
23...	1100	5.7	272	7.0	12.4	6.1	260

DATE	TIME	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT
NOV , 1978							
29...	1030	44	0	9.0	5.2	26	54
JAN , 1979							
31...	1025	47	0	7.0	7.1	34	59
MAY							
23...	1100	31	0	8.3	2.4	37	69

DATE	SODIUM AD-SORP-TION RATIO	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
NOV , 1978							
29...	1.7	57	0	47	14	12	41
JAN , 1979							
31...	2.2	--	--	59	--	19	33
MAY							
23...	2.9	67	0	55	11	11	40

DATE	TIME	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
NOV , 1978												
29...	1030	.09	.01	.10	.16	.46	.62	.72	3.2	.380	.25	.77
MAY , 1979												
23...	1100	.05	.02	.07	.11	.36	.47	.54	2.4	.590	.14	.43

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
NOV , 1978											
29...	1030	5	0	0	0	2	0	.0	0	0	10
MAR , 1979											
28...	1100	8	0	0	0	0	0	--	0	0	10
MAY											
23...	1100	2	0	0	0	0	0	.1	0	0	10

12017330 PACIFIC COUNTY DRAINAGE DITCH NO. 1 NEAR TOKELAND, WA--Continued

WATER QUALITY DATA

DATE	TIME	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	CHLORDANE, TOTAL (UG/L)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDE, TOTAL (UG/L)	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDT, TOTAL (UG/L)
NOV , 1978 29...	1030	.0	--	.00	--	.0	--	.01	--	.00	--	.00
MAR , 1979 28...	1100	.0	0	.00	.5	.0	0	.01	14	.00	42	.00
MAY 23...	1100	.0	--	.00	--	.0	--	.01	--	.00	--	.00

DATE	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG)	DIAZINON, TOTAL (UG/L)	DIAZINON, TOTAL IN BOTTOM MATERIAL (UG/KG)	DIELDRIN TOTAL (UG/L)	DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	HEPTACHLOR, TOTAL (UG/L)
NOV , 1978 29...	--	.01	--	.02	--	.00	.00	--	.00	--	.00
MAR , 1979 28...	2.5	.00	.0	.01	.7	.00	.00	.0	.00	.0	.00
MAY 23...	--	.19	--	.00	--	.00	.00	--	.00	--	.00

DATE	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG)	MALATHION, TOTAL (UG/L)	MALATHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL PARATHION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRITHION, TOTAL (UG/L)
NOV , 1978 29...	--	.00	--	.00	--	.00	--	.00	.00	--	.00
MAR , 1979 28...	.0	.00	.0	.00	.1	.00	.0	.00	.00	.0	.00
MAY 23...	--	.00	--	.00	--	.00	--	.00	.00	--	.00

DATE	METHYL TRITHION, TOT. IN BOTTOM MATL. (UG/KG)	MIREX, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PARATHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	TOXAPHENE, TOTAL (UG/L)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION, TOTAL IN BOTTOM MATERIAL (UG/KG)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)
NOV , 1978 29...	--	.00	.00	.00	--	0	--	.00	--	--	--
MAR , 1979 28...	.0	.00	--	.00	.0	0	0	.00	.0	.00	.02
MAY 23...	--	.00	--	.00	--	0	--	.00	--	--	--

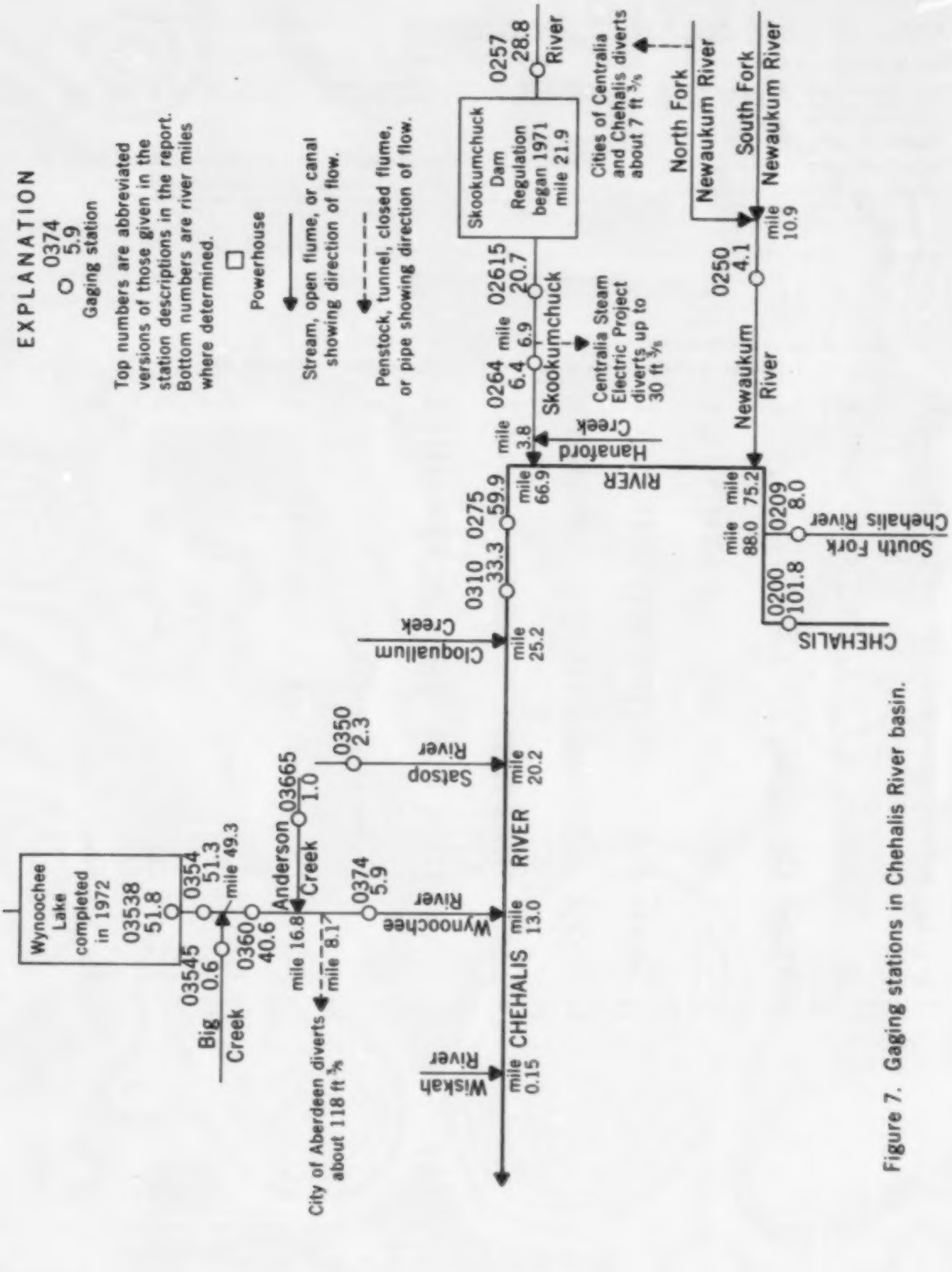
EXPLANATION
0374
5.9
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Wynoochee Lake completed in 1972
03538
51.8
03545
0.6
Big Creek
0354
51.3
mile 49.3
0360
40.6
Anderson Creek
03665
1.0
mile 16.8
mile 8.1
City of Aberdeen diverts about 118 ft³/s
0374
5.9
Wynoochee River
mile 13.0
0350
2.3
Satsop River
mile 20.2
Wiskah River
mile 0.15
CHEHALIS RIVER
Cloquallum Creek
mile 25.2
0310
33.3
0275
59.9
mile 66.9
mile 3.8
Hanaford Creek
0264
6.4
mile 6.9
Skookumchuck
Centralia Steam Electric Project diverts up to 30 ft³/s
02615
20.7
Skookumchuck Dam Regulation began 1971 mile 21.9
0257
28.8
River
RIVER
Newaukum River
mile 75.2
0250
4.1
mile 10.9
North Fork Newaukum River
South Fork Newaukum River
Cities of Centralia and Chehalis diverts about 7 ft³/s
0209
8.0
South Fork Chehalis River
mile 88.0
0200
101.8
CHEHALIS

Figure 7. Gaging stations in Chehalis River basin.

12020000 CHEHALIS RIVER NEAR DOTY, WA

LOCATION.--Lat 46°37'03", long 123°16'35", in NE¼NW¼ sec.14, T.13 N., R.5 W., Lewis County, Hydrologic Unit 17100103, on right bank 1.3 mi (2.1 km) south of Doty, 1.6 mi (2.6 km) upstream from Elk Creek, 3.4 mi (5.5 km) north of Pe Ell, and at mile 101.8 (163.8 km).

DRAINAGE AREA.--113 mi² (293 km²).

PERIOD OF RECORD.--October 1939 to current year. Chemical analyses July 1959 to September 1970, sediment records October 1961 to December 1964 (partial-record station).

REVISED RECORDS.--WSP 1316: 1943(M). WSP 1446: 1946(M). WRD Wash. 1972: 1945(M).

GAGE.--Water-stage recorder. Datum of gage is 302.1 ft (92.08 m) National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Oct. 1, 1961, nonrecording gage and crest-stage gage at site 100 ft (30 m) downstream at same datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--40 years, 575 ft³/s (16.28 m³/s), 69.10 in/yr (1,755 mm/yr), 416,600 acre-ft/yr (514 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft³/s (646 m³/s) Jan. 20, 1972, gage height, 18.36 ft (5.596 m) from rating curve extended above 7,400 ft³/s (210 m³/s) on basis of slope-area measurement of peak flow; minimum, 18 ft³/s (0.51 m³/s) Oct. 14, 1952, Aug. 25-28, 1958, Sept. 4, 5, 1972; minimum gage height, 0.69 ft (0.210 m) Aug. 18, 19, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,800 ft³/s (193 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 6	2400	*7,150	202	*10.00	3.048

Minimum discharge, 25 ft³/s (0.71 m³/s), Aug. 13, gage height, 0.72 ft (0.219 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	200	97	2190	270	190	1140	246	200	99	139	32	33
2	179	90	1310	250	180	912	287	190	94	118	31	53
3	165	187	914	230	202	856	290	178	90	83	31	125
4	155	1160	772	216	267	3000	264	210	87	68	29	170
5	146	521	651	201	781	4470	249	450	94	62	29	113
6	137	351	543	190	2500	2230	229	798	95	57	29	90
7	131	283	464	180	4000	1500	209	921	87	53	29	70
8	125	295	401	175	1730	1120	209	649	82	54	28	81
9	120	250	390	173	1910	886	262	507	78	51	28	295
10	121	222	384	309	1710	732	307	417	75	78	27	164
11	123	205	855	243	1660	618	381	363	72	85	27	107
12	112	191	759	222	2540	530	568	323	70	72	26	83
13	106	170	613	227	2770	465	1340	291	72	63	26	70
14	101	158	634	226	1890	415	1050	264	71	58	29	60
15	96	152	601	222	1320	400	762	243	74	53	32	54
16	94	431	530	213	1050	360	642	228	85	49	32	51
17	92	675	548	210	1510	331	597	211	97	46	31	46
18	90	555	484	200	2580	307	556	198	85	43	30	45
19	85	720	421	202	1760	283	522	185	81	41	42	43
20	85	565	380	256	1270	265	478	172	78	39	45	42
21	85	462	387	600	1010	251	427	160	72	38	43	41
22	81	395	616	504	832	238	382	153	65	38	46	41
23	76	351	658	404	796	227	349	149	65	38	38	38
24	81	331	691	358	1270	215	319	145	61	37	34	38
25	78	335	609	312	2740	208	288	136	58	36	32	37
26	74	362	510	282	2320	200	267	132	54	36	30	37
27	72	355	439	276	1820	210	250	134	53	34	29	36
28	74	633	376	252	1440	205	238	138	52	36	29	38
29	136	732	340	233	---	203	224	127	52	36	29	37
30	149	1690	320	218	---	219	209	115	60	34	29	36
31	110	---	300	200	---	229	---	107	---	34	30	---
TOTAL	3477	12904	19090	8056	44048	23225	12401	8494	2258	1709	982	2174
MEAN	112	430	616	260	1573	749	413	274	75.3	55.1	31.7	72.5
MAX	200	1690	2190	600	4000	4470	1340	921	99	139	46	295
MIN	72	90	300	173	180	200	209	107	52	34	26	33
CFSM	.99	3.81	5.45	2.30	13.9	6.63	3.66	2.43	.67	.49	.28	.64
IN.	1.14	4.25	6.28	2.65	14.50	7.65	4.08	2.80	.74	.56	.32	.72
AC-FT	6900	25600	37870	15980	87370	46070	24600	16850	4480	3390	1950	4310

CAL YR 1978 TOTAL 140747 MEAN 386 MAX 2670 MIN 31 CFSM 3.42 IN 46.33 AC-FT 279200
WTR YR 1979 TOTAL 138816 MEAN 380 MAX 4470 MIN 26 CFSM 3.36 IN 45.70 AC-FT 275300

12020565 CHEHALIS RIVER AT DRYAD, WA

LOCATION.--Lat 46°37'54", long 123°14'51", in NW¼NE¼ sec.12, T.13 N., R.5 W., Lewis County, Hydrologic Unit 17100103, at Chandler Road bridge, 0.25 mi (0.4 km) south of Dryad, 1.0 mi (1.6 km) downstream from Dunn Creek, and at mile 97.8 (157 km).

PERIOD OF RECORD.--October 1977 to current year.

REMARKS.--Water-discharge from rating; discharge value is good. Quality water collection, prior to October 1977, was at the old bridge 0.6 mi (0.97 km) downstream from Dunn Creek. Prior to 1961, data were published as "at Dryad", and from 1961-70, published as "near Doty". Both times published as 12020000.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
09...	1350	142	73	7.5	13.4	45	3.0
NOV							
06...	1225	470	72	7.1	6.7	20	2.0
DEC							
04...	1245	1230	71	7.4	7.4	55	3.0
JAN , 1979							
29...	1430	340	55	7.8	1.6	20	2.0
FEB							
20...	1310	2090	65	7.0	5.5	15	5.0
MAR							
12...	1245	820	62	7.4	7.6	30	3.0
APR							
16...	1315	900	60	7.5	7.3	15	3.0
MAY							
21...	1230	232	74	8.1	14.5	30	2.0
JUN							
18...	1210	142	76	7.5	14.0	50	2.0
JUL							
09...	1300	84	81	7.8	19.1	50	2.0
AUG							
06...	1245	46	85	7.8	18.6	40	2.0
SEP							
04...	1245	660	80	7.4	14.0	70	5.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
09...	10.3	.14	.01	.020	.01	.03
NOV						
06...	12.0	.90	.00	.020	.00	.00
DEC						
04...	12.1	1.1	.03	.030	.01	.03
JAN , 1979						
29...	14.0	.06	.02	.010	.00	.00
FEB						
20...	12.0	1.0	.01	.010	.01	.03
MAR						
12...	12.1	.70	.01	.010	.01	.03
APR						
16...	12.0	.62	.01	.020	.05	.15
MAY						
21...	12.2	.20	.06	.010	.00	.00
JUN						
18...	10.7	.17	.03	.000	.00	.00
JUL						
09...	9.8	.08	.02	.010	.01	.03
AUG						
06...	9.6	.03	.01	.030	.00	.00
SEP						
04...	9.3	.23	.01	.020	.01	.03

CHEHALIS RIVER BASIN

12020900 SOUTH FORK CHEHALIS RIVER NEAR BOISTFORT, WA

LOCATION.--Lat 46°31'38", long 123°06'58", in SE¼NE¼ sec.13, T.12 N., R.4 W., Lewis County, Hydrologic Unit 17100103, on left bank 1.0 mi (1.6 km) downstream from Neiman Creek, 1.0 mi (1.6 km) southeast of Boistfort, and 2.7 mi (4.3 km) upstream from Stillman Creek.

DRAINAGE AREA.--44.9 mi² (116.3 km²).

PERIOD OF RECORD.--August 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 280 ft (85 m), from topographic map.

REMARKS.--Records good. Many small diversions for irrigation and domestic use above station. No regulation.

AVERAGE DISCHARGE.--14 years, 177 ft³/s (5.013 m³/s), 53.53 in/yr (1,360 mm/yr), 128,200 acre-ft/yr (158 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 6,200 ft³/s (176 m³/s) Dec. 4, 1975, gage height, 14.73 ft (4.490 m), from rating curve extended above 3,000 ft³/s (85.0 m³/s) on basis of slope-area measurement at gage height 13.86 ft (4.225 m); minimum, 0.10 ft³/s (0.003 m³/s) Sept. 1-2, 1967, gage height, 2.36 ft (0.719 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base 1,900 ft³/s (53.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 7	0500	*1,970	55.8	*9.81	2.990

Minimum discharge, 0.46 ft³/s (0.013 m³/s) Aug. 13, 14, gage height, 2.48 ft (0.756 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	25	660	98	74	380	70	62	27	17	1.6	8.0
2	37	23	380	90	72	318	70	60	25	24	1.3	9.6
3	36	31	268	84	70	297	67	57	23	16	1.1	39
4	33	266	228	76	78	673	64	60	21	13	1.4	42
5	31	130	180	70	159	1370	62	121	21	11	1.9	27
6	30	80	150	66	460	752	60	136	22	11	1.9	25
7	28	69	130	62	1420	521	58	164	20	10	1.9	19
8	27	67	120	60	636	406	58	131	18	9.2	1.3	16
9	27	60	115	60	576	332	71	108	17	9.2	1.3	22
10	27	53	110	118	543	274	79	94	16	11	1.6	25
11	26	47	290	104	539	231	81	85	14	17	1.4	18
12	25	44	249	88	711	200	90	78	13	14	.92	14
13	24	41	214	84	709	177	224	71	13	13	.64	12
14	24	38	202	84	537	159	220	67	13	10	2.2	11
15	23	37	198	89	422	154	172	62	13	8.0	6.9	10
16	23	88	175	85	363	142	151	58	13	6.9	6.6	8.0
17	23	160	173	84	411	130	157	55	19	6.0	5.4	8.4
18	22	135	164	81	721	121	144	52	18	4.6	4.9	8.0
19	21	262	165	79	548	111	132	49	16	3.3	7.6	8.0
20	21	220	132	86	427	104	121	47	14	2.5	19	8.0
21	21	170	132	134	368	98	111	44	13	2.0	17	8.4
22	20	140	195	142	311	92	102	42	12	2.0	17	8.0
23	20	130	228	121	318	86	95	42	11	2.9	13	8.0
24	19	120	209	112	470	82	88	41	11	2.9	12	7.6
25	20	115	186	103	600	79	82	38	10	2.9	10	7.3
26	19	120	168	96	531	77	77	36	8.4	2.2	8.0	7.3
27	19	140	154	92	511	79	73	36	7.6	2.0	8.0	7.3
28	19	180	139	87	451	81	70	37	7.3	2.0	7.6	7.3
29	27	250	127	82	---	74	67	35	6.6	1.9	7.6	7.6
30	41	540	115	80	---	73	64	31	6.9	2.0	7.3	7.3
31	29	---	105	77	---	72	---	29	---	1.9	7.6	---
TOTAL	803	3707	6025	2774	13036	7745	2980	2028	449.8	241.4	186.76	414.9
MEAN	25.9	127	194	89.5	466	250	99.3	65.4	15.0	7.79	6.02	13.8
MAX	41	540	660	142	1420	1370	224	164	27	24	19	42
MIN	19	23	105	60	70	72	58	29	6.6	1.9	.64	7.3
CFSM	.58	2.83	4.32	1.99	10.4	5.57	2.21	1.46	.33	.17	.13	.31
IN.	.67	3.15	4.99	2.30	10.80	6.42	2.47	1.68	.37	.20	.15	.34
AC-FT	1590	7530	11950	5500	25860	15360	5910	4020	892	479	370	823

CAL YR 1978 TOTAL 44041.48 MEAN 121 MAX 660 MIN 4.1 CFSM 2.70 IN 36.49 AC-FT 87360
WTR YR 1979 TOTAL 40480.86 MEAN 111 MAX 1420 MIN .64 CFSM 2.47 IN 33.54 AC-FT 80290

12025000 NEWAUKUM RIVER NEAR CHEHALIS, WA

LOCATION.--Lat 46°37'13", long 122°56'38", in SW¼SW¼ sec.9, T.13 N., R.2 W., Lewis County, Hydrologic Unit 17100103, on left bank at highway bridge 3.0 mi (4.8 km) southeast of Chehalis, and at mile 4.1 (6.6 km).

DRAINAGE AREA.--155 mi² (401 km²).

PERIOD OF RECORD.-March 1929 to September 1931, July 1942 to current year. Chemical analyses July 1960 to September 1970, October 1974 to September 1975, October 1976 to September 1977; sediment records October 1961 to June 1965 (partial-record station).

REVISED RECORDS.--WSP 1012: 1943. WSP 1316: 1929-30(M), 1950(M). WSP 1716: Drainage area. WSP 1932: 1931(M), 1945-49, 1954(M), 1956(P), 1958(M), 1959-60.

GAGE.--Water-stage recorder. Altitude of gage is 190 ft (58 m), from topographic map. Prior to Oct. 1, 1929, nonrecording gage at same site at datum 1.0 ft (0.30 m) higher. Oct. 1, 1929, to July 5, 1962, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good. Cities of Chehalis and Centralia divert about 7 ft³/s (0.20 m³/s) from North Fork Newaukum River for municipal use. No regulation.

AVERAGE DISCHARGE.--39 years (water years, 1930-31, 1943-79), 505 ft³/s (14.30 m³/s), 365,900 acre-ft/yr (451 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s (292 m³/s) Dec. 2, 1977, gage height, 12.49 ft (3.807 m); maximum gage height, 13.62 ft (4.151 m) Dec. 9, 1953; minimum discharge, 12 ft³/s (0.34 m³/s) Sept. 13, 14, 1949, Aug. 29, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 7	0500	*7,280	206	*10.23	3.118

Minimum discharge 25 ft³/s (0.71 m³/s) Aug. 11, 12, 13, gage height, 1.41 ft (0.430 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180	93	2680	330	190	866	257	217	123	139	33	46
2	150	87	1380	310	180	710	388	211	119	152	32	136
3	137	340	981	290	200	710	400	202	109	102	33	250
4	127	1030	1240	270	344	866	372	208	103	86	33	163
5	122	592	1070	250	848	1500	364	392	107	80	31	116
6	111	372	818	230	2250	1290	320	540	112	74	31	103
7	106	272	650	210	4910	1120	295	638	103	75	28	87
8	102	300	535	190	1920	884	274	638	100	71	28	87
9	97	296	500	200	1400	740	316	500	95	67	27	152
10	100	213	480	560	1320	614	368	404	91	70	26	139
11	100	192	770	420	1580	535	500	344	86	73	26	105
12	95	171	752	316	2360	470	560	295	84	75	26	91
13	87	155	608	344	1980	424	904	264	84	68	26	80
14	85	145	585	328	1340	388	1010	238	83	61	29	73
15	83	137	662	320	1000	465	788	220	81	59	36	66
16	83	171	565	295	884	490	674	202	86	55	35	63
17	83	634	520	270	988	420	668	193	92	51	37	60
18	82	496	475	257	1380	372	656	182	97	46	36	59
19	80	1100	430	299	1110	336	644	175	87	45	55	56
20	80	754	398	445	911	306	560	167	91	42	92	56
21	89	568	370	824	872	288	485	163	86	41	68	57
22	82	440	730	764	740	267	426	154	80	42	67	53
23	78	372	866	565	776	247	384	154	77	43	53	51
24	78	331	1210	500	918	235	368	150	74	41	59	51
25	78	340	1040	416	1170	229	316	145	71	40	51	50
26	76	354	780	356	1180	223	292	141	67	40	45	48
27	74	349	640	336	1180	235	271	145	63	39	41	47
28	74	705	500	288	1040	267	253	172	61	37	41	52
29	104	860	400	250	---	232	261	156	61	37	40	56
30	150	2030	370	230	---	229	229	139	67	36	39	50
31	106	---	350	210	---	241	---	131	---	34	41	---
TOTAL	3079	13865	23355	10873	34971	16199	13569	7878	2638	1921	1245	2503
MEAN	99.3	462	753	351	1249	523	452	254	87.9	62.0	40.2	83.4
MAX	180	2030	2680	824	4910	1500	1010	638	123	152	92	250
MIN	74	87	350	190	180	223	229	131	61	34	26	46
CFSM	.64	2.98	4.86	2.27	8.06	3.37	2.92	1.64	.57	.40	.26	.54
IN.	.74	3.33	5.61	2.61	8.39	3.89	3.26	1.89	.63	.46	.30	.60
AC-FT	6110	27500	46320	21570	69360	32130	26910	15630	5230	3810	2470	4960

CAL YR 1978 TOTAL 135601 MEAN 372 MAX 2680 MIN 44 CFSM 2.40 IN 32.56 AC-FT 269100
WTR YR 1979 TOTAL 132096 MEAN 362 MAX 4910 MIN 26 CFSM 2.34 IN 31.70 AC-FT 262000

12025500 CHEHALIS RIVER AT CENTRALIA, WA

LOCATION.--Lat 46°42'45", long 122°58'39", in NW¼SE¼ sec.7, T.14 N., R.2 W., Lewis County, Hydrologic Unit 17100103, at Mellen Street bridge in Centralia, and at mile 67.5 (108.6 km).

DRAINAGE AREA.--653 mi² (1,691 km²).

PERIOD OF RECORD.--Water years 1910-11, 1977 to current year.

REMARKS.--Water-discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
09...	1440	420	87	7.3	13.5	45	2.0
NOV							
06...	1305	1400	73	7.1	7.4	70	8.0
DEC							
04...	1335	3900	66	7.1	6.9	30	10
JAN , 1979							
29...	1530	990	76	7.3	2.1	35	4.0
FEB							
20...	1350	5700	65	6.8	5.8	40	11
MAR							
12...	1335	2170	69	6.9	7.9	40	6.0
APR							
16...	1355	2320	81	7.3	8.6	40	5.0
MAY							
21...	1325	470	88	7.3	17.3	35	3.0
JUN							
18...	1315	310	95	7.0	16.7	40	1.0
JUL							
09...	1345	215	101	7.9	20.7	50	3.0
AUG							
06...	1340	E120	121	7.5	22.2	25	2.0
SEP							
04...	1355	660	97	7.1	17.4	40	7.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
09...	8.7	.16	.04	.080	.04	.12
NOV						
06...	10.6	1.2	.02	.050	.01	.03
DEC						
04...	11.2	1.2	.03	.070	.04	.12
JAN , 1979						
29...	13.0	.76	.06	.030	.02	.06
FEB						
20...	12.8	1.2	.03	.020	.01	.03
MAR						
12...	11.0	.86	.02	.020	.01	.03
APR						
16...	11.1	.72	.03	.030	.01	.03
MAY						
21...	9.4	.44	.04	.030	.00	.00
JUN						
18...	8.5	.16	.08	--	.00	.00
JUL						
09...	11.1	.02	.01	.120	.04	.12
AUG						
06...	10.0	.01	.00	.110	.05	.15
SEP						
04...	7.1	.26	.11	.070	.01	.03

12025700 SKOOKUMCHUCK RIVER NEAR VAIL, WA

LOCATION.--Lat 46°46'22", long 122°35'34", in SW¼NW¼ sec.20, T.15 N., R.2 E., Thurston County, Hydrologic Unit 17100103, on right bank about 150 ft (46 m) downstream from logging bridge, 0.4 mi (0.6 km) downstream from Hospital Creek, 5.8 mi (9.3 km) southeast of Vail, and at mile 28.8 (46.3 km).

DRAINAGE AREA.--40.0 mi^2 (103.6 km^2).

PERIOD OF RECORD.--October 1967 to current year.

REVISED RECORDS.--WDR WA-75-1: 1974.

GAGE.--Water-stage recorder. Altitude of gage is 710 ft (216 m), from topographic map.

REMARKS. Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--12 years, 205 ft^3/s (5.806 m^3/s), 69.60 in/yr (1,768 mm/yr), 148,500 acre-ft/yr (183 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,900 ft^3/s (195 m^3/s) Jan. 20, 1972, gage height, 10.93 ft (3.331 m); minimum, 18 ft^3/s (0.51 m^3/s) part or all of each day Aug. 22-24, 26-31, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,250 ft^3/s (35.4 m^3/s) and maximum (*).

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Feb. 6	2100	*2,580	73.1	*7.90	2.408

Minimum discharge, 22 ft^3/s (0.62 m^3/s) part or all of each day Aug. 8-13, 25 to Sept. 1, minimum gage height, 3.25 ft (0.991 m) Aug. 9-13, 28, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	35	680	120	80	361	97	108	53	92	24	28
2	62	36	422	110	76	299	110	101	50	63	24	92
3	58	101	321	100	76	302	118	95	49	48	24	90
4	55	249	291	95	84	455	122	114	49	43	24	63
5	53	120	243	90	248	791	124	258	56	40	24	47
6	50	88	202	86	921	618	124	314	49	39	23	40
7	48	75	170	82	1290	519	118	297	47	37	23	35
8	47	103	149	80	613	402	124	264	46	35	23	41
9	46	81	148	80	599	326	135	219	44	33	22	80
10	46	72	148	112	612	276	137	186	43	37	22	72
11	44	64	283	96	653	242	156	153	42	35	22	53
12	42	60	249	103	869	215	216	137	42	36	22	46
13	41	56	208	101	781	193	516	127	42	33	22	40
14	40	53	228	95	541	176	480	118	41	31	24	36
15	39	53	213	89	420	191	363	108	41	30	24	32
16	38	103	191	85	351	168	307	103	43	29	26	30
17	38	205	174	81	394	151	300	95	46	29	24	29
18	37	163	151	77	664	137	300	86	42	28	26	29
19	36	156	134	83	509	129	288	81	42	27	29	28
20	39	122	122	129	411	120	258	78	40	27	29	27
21	36	106	130	373	342	114	228	75	39	27	29	27
22	35	93	306	279	291	106	207	72	37	27	26	26
23	34	86	297	209	285	101	191	69	36	26	27	26
24	35	83	479	170	346	97	168	66	35	26	26	25
25	34	63	372	144	519	95	156	63	35	26	24	25
26	34	81	289	127	679	92	144	63	34	26	23	24
27	33	90	236	115	557	101	140	72	34	25	22	24
28	35	225	194	105	445	97	129	69	34	25	22	27
29	54	249	164	97	---	93	120	62	34	25	22	24
30	43	695	148	90	---	97	114	58	50	24	22	24
31	37	---	130	84	---	97	---	55	---	24	24	---
TOTAL	1336	3786	7472	3687	13656	7161	5990	3766	1275	1053	748	1190
MEAN	43.1	126	241	119	488	231	200	121	42.5	34.0	24.1	39.7
MAX	67	695	680	373	1290	791	516	314	56	92	29	92
MIN	33	35	122	77	76	92	97	55	34	24	22	24
CFSM	1.08	3.15	6.03	2.98	12.2	5.78	5.00	3.03	1.06	.85	.60	.99
IN.	1.24	3.52	6.95	3.43	12.70	6.66	5.57	3.50	1.19	.98	.70	1.11
AC-FT	2650	7510	14820	7310	27090	14200	11880	7470	2530	2090	1480	2360

CAL YR 1978 TOTAL 52132 MEAN 143 MAX 695 MIN 27 CFSM 3.58 IN 48.48 AC-FT 103400
WTR YR 1979 TOTAL 51120 MEAN 140 MAX 1290 MIN 22 CFSM 3.50 IN 47.54 AC-FT 101400

12026150 SKOOKUMCHUCK RIVER BELOW BLOODY RUN CREEK NEAR CENTRALIA, WA

LOCATION.--Lat 46°47'25", long 122°44'03", in NW¼NW¼ sec.18, T.15 N., R.1 E., Thurston County, Hydrologic Unit 17100103, on right bank, 0.7 mi (1.1 km) downstream from Bloody Run Creek, 1.2 mi (1.9 km) downstream from Skookumchuck Dam, 12 mi (19 km) northeast of Centralia, and at mile 20.7 (33.3 km).

DRAINAGE AREA.--65.9 mi³(170.7 km²). Area at site used prior to August 1969, 61.7 mi² (159.8 km²).

PERIOD OF RECORD.--April 1929 to November 1933, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1316 and 1736. Published as "near Centralia" (12026000) 1929 to July 1969.

GAGE.--Water-stage recorder. Datum of gage is 317.34 ft (96.725 m) National Geodetic Vertical Datum of 1929. Apr. 1, 1929, to Sept. 30, 1931, and Feb. 1, 1932, to Dec. 6, 1933, nonrecording gage at site 1.1 mi (1.8 km) upstream at different datum. Oct. 1939 to July 1969 at site 1.3 mi (2.1 km) upstream at datum 301.04 ft (91.757 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those above 1,000 ft³/s, which are fair. Flow regulated by Skookumchuck Dam since January 1971. No diversions above station.

AVERAGE DISCHARGE.--44 years (water years 1930-33, 1940-79), 252 ft³/s (7.137 m³/s), 51.93 in/yr (1,319 mm/yr), 182,600 acre-ft/yr (225 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,710 ft³/s (190 m³/s), Dec. 9, 1953, gage height, 48.59 ft (14.810 m), site and datum then in use; minimum 12 ft³/s (0.34 m³/s) May 28, 1970, caused by pumping during dam construction.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 12	2330	*1,290	36.5	*8.46	2.579

Minimum discharge, 78 ft³/s (2.21 m³/s) Aug. 20, 21, gage height, 4.99 ft (1.521 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	228	146	209	212	115	495	133	131	85	92	83	110
2	230	138	205	212	114	398	145	125	85	90	83	113
3	230	150	196	212	115	353	157	117	83	92	83	119
4	230	162	209	212	115	425	157	121	85	90	83	113
5	218	146	218	209	123	881	157	175	85	92	83	111
6	216	142	218	209	198	840	153	275	85	92	83	110
7	214	134	216	209	212	700	147	383	85	90	83	110
8	214	129	216	209	154	540	143	386	85	90	83	113
9	214	127	214	207	144	422	153	329	85	88	83	117
10	214	127	214	214	144	350	163	275	85	88	83	113
11	212	127	221	212	272	293	175	257	85	87	83	113
12	212	127	223	189	976	255	202	255	85	88	83	111
13	212	125	221	158	1180	225	453	250	87	88	83	111
14	212	125	221	150	881	202	632	167	87	88	83	143
15	209	125	221	133	628	222	484	129	87	87	83	165
16	192	127	221	117	498	232	392	129	87	87	82	165
17	177	131	221	117	460	202	389	129	90	87	83	165
18	177	133	218	115	813	180	410	115	92	85	83	169
19	177	142	216	115	708	167	392	108	92	85	83	169
20	177	134	212	117	612	155	374	108	90	85	82	169
21	174	133	212	140	505	147	262	101	90	85	80	169
22	174	131	214	133	416	139	245	90	90	87	80	169
23	168	129	216	127	380	131	222	87	92	88	94	169
24	162	129	225	123	392	123	202	87	90	88	108	169
25	160	133	223	119	547	121	185	87	90	83	111	169
26	160	134	221	117	700	119	171	87	90	83	111	169
27	158	134	218	117	756	123	161	87	90	83	111	169
28	158	144	216	117	620	133	153	87	90	83	111	169
29	158	146	214	115	---	127	145	87	88	83	111	167
30	156	212	214	115	---	127	137	85	90	83	110	171
31	156	---	214	115	---	131	---	85	---	83	110	---
TOTAL	5949	4122	6697	4866	12858	8958	7294	4934	2630	2700	2795	4299
MEAN	192	137	216	157	459	289	243	159	87.7	87.1	90.2	143
MAX	230	212	225	214	1180	881	632	386	92	92	111	171
MIN	156	125	196	115	114	119	133	85	83	83	80	110
AC-FT	11800	8180	13280	9650	25500	17770	14470	9790	5220	5360	5540	8530

CAL YR 1978 TOTAL 69450 MEAN 190 MAX 598 MIN 86 AC-FT 137800
WTR YR 1979 TOTAL 68102 MEAN 187 MAX 1180 MIN 80 AC-FT 135100

12026400 SKOOKUMCHUCK RIVER NEAR BUCODA, WA

LOCATION.--Lat 46°46'20", long 122°55'23", in SW¼NW¼ sec.22, T.15 N., R.2 W., Thurston County, Hydrologic Unit 17100103, on left bank 100 ft (30 m) downstream from bridge on State Highway 507, 3.3 mi (5.3 km) southwest of Bucoda, and at mile 6.4 (10.3 km).

DRAINAGE AREA.--112 mi² (290 km²).

PERIOD OF RECORD.--December 1967 to current year. Water temperatures October 1968 to September 1971, sediment records July 1968 to September 1971.

GAGE.--Water-stage recorder. Datum of gage is 194.60 ft (59.314 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records excellent. Flow regulated by Skookumchuck River Dam since January 1971. Up to 30 ft³/s (0.85 m³/s) diverted at point 0.5 mi (0.8 km) upstream for consumptive use at Centralia Steam Electric Project. Other minor diversions for domestic use and irrigation above station.

AVERAGE DISCHARGE.--8 years, (water years 1972-79), 363 ft³/s (10.28 m³/s), 263,000 acre-ft/yr (324 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,190 ft³/s (232 m³/s) Jan. 21, 1972, gage height, 16.82 ft (5.127 m); minimum, 21 ft³/s (0.59 m³/s) Aug. 15, 16, 18, 19, 20, 1970, gage height, 3.85 ft (1.173 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base 2,750 ft³/s (77.9 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 7	0400	*2,000	56.6	*9.44	2.877

Minimum discharge, 57 ft³/s (1.61 m³/s) July 28, gage height, 4.30 ft (1.311 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	255	138	1010	265	134	690	175	156	79	93	70	102
2	258	119	570	269	127	570	196	149	71	99	69	110
3	244	175	434	265	147	510	208	138	71	90	67	175
4	241	394	406	262	163	570	211	129	71	87	73	165
5	244	283	398	251	214	1110	208	187	80	87	83	123
6	237	220	378	244	566	1170	199	326	80	85	71	111
7	227	182	358	244	1410	974	199	430	79	79	71	104
8	220	144	334	244	630	774	187	502	74	79	71	115
9	217	136	322	244	442	618	190	426	77	90	66	147
10	217	131	330	314	394	526	220	362	76	77	62	123
11	220	125	370	330	494	462	241	334	71	79	63	125
12	220	123	390	310	1290	414	283	322	74	83	70	125
13	220	119	370	265	1610	366	490	318	83	83	80	108
14	220	117	358	244	1210	330	754	265	90	82	70	110
15	211	117	358	237	874	362	630	163	80	79	70	127
16	196	125	358	190	702	414	518	153	73	74	71	127
17	165	170	346	180	646	370	530	140	76	67	70	136
18	165	170	330	172	994	330	554	129	76	80	71	140
19	167	314	306	170	1050	269	542	117	76	77	76	131
20	167	265	286	185	846	237	510	127	83	76	80	123
21	167	211	283	338	714	223	382	113	83	73	76	121
22	172	182	322	370	594	205	346	97	82	73	74	121
23	165	167	370	290	558	185	310	85	85	73	77	123
24	151	160	414	244	622	170	276	82	87	76	100	134
25	144	167	414	214	738	160	248	82	79	74	106	131
26	142	190	374	185	890	158	227	82	79	77	106	119
27	142	208	346	177	966	158	205	87	79	79	104	119
28	147	279	322	180	846	185	190	93	79	61	100	119
29	149	314	294	170	---	172	177	90	79	67	102	117
30	151	702	279	158	---	170	167	87	83	71	102	121
31	144	---	272	140	---	172	---	83	---	70	102	---
TOTAL	5985	6147	11702	7351	19871	13024	9573	5854	2355	2440	2473	3752
MEAN	193	205	377	237	710	420	319	189	78.5	78.7	79.8	125
MAX	258	702	1010	370	1610	1170	754	502	90	99	106	175
MIN	142	117	272	140	127	158	167	82	71	61	62	102
AC-FT	11870	12190	23210	14580	39410	25830	18990	11610	4670	4840	4910	7440

CAL YR 1978 TOTAL 96186 MEAN 264 MAX 1010 MIN 95 AC-FT 190800
WTR YR 1979 TOTAL 90527 MEAN 248 MAX 1610 MIN 61 AC-FT 179600

12027500 CHEHALIS RIVER NEAR GRAND MOUND, WA

LOCATION.--Lat 46°46'34", long 123°02'04", in NE¼NE¼ sec.22, T.15 N., R.3 W., Thurston County, Hydrologic Unit 17100103, on left bank at downstream side of highway bridge at Meadows, 1.5 mi (2.4 km) southwest of Grand Mound, 7.0 mi (11.3 km) downstream from Skookumchuck River, and at mile 59.9 (96.4 km).

DRAINAGE AREA.--895 mi^2 (2,318 km^2).

PERIOD OF RECORD.--Water discharge: October 1928 to current year. Water temperatures March 1952 to September 1974.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1286: 1929-30(M), 1931, 1932-34(M).

GAGE.--Water-stage recorder. Datum of gage is 123.65 ft (37.689 m), National Geodetic Vertical Datum of 1929. Prior to Oct. 3, 1934, nonrecording gage at present site at datum 3.0 ft (0.91 m) higher.

REMARKS.--Records excellent. Minor effect from regulation on Skookumchuck River by Skookumchuck Dam since January 1971. Up to 30 ft^3/s (0.85 m^3/s) of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use above station, including about 7 ft^3/s (0.20 m^3/s) for municipal water supply for Centralia and Chehalis. USGS satellite telemeter at station.

AVERAGE DISCHARGE.--51 years, 2,815 ft^3/s (79.72 m^3/s) 42.71 in/yr (1,085 mm/yr), 2,039,000 acre-ft/yr (2,514 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,200 ft^3/s (1,390 m^3/s) Jan. 21, 1972, gage height, 18.21 ft (5.550 m); minimum, 82 ft^3/s (2.32 m^3/s) Aug. 30, 1967; minimum gage height, 0.83 ft (0.253 m) Aug. 27, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft^3/s (453 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	(m^3/s)	Gage height (ft)	(m)
Feb. 8	0200	*18,300	518	*13.38	4.078

Minimum discharge, 150 ft^3/s (4.25 m^3/s) Aug. 11, 12, gage height, 2.06 ft (0.628 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1080	605	12400	1390	1070	6650	1210	1030	540	375	174	249
2	1010	543	10000	1340	990	5290	1370	990	510	610	168	299
3	927	635	6490	1310	976	4470	1530	941	488	540	162	610
4	864	2890	5340	1270	1390	5300	1450	913	465	433	162	857
5	820	3400	4570	1230	2160	12100	1400	1340	460	375	174	730
6	790	2160	3700	1100	4670	13800	1320	2300	488	343	171	535
7	748	1630	3140	1020	15400	9880	1230	3350	474	323	162	456
8	718	1390	2700	1050	17400	6970	1150	3240	442	315	160	411
9	700	1340	2460	1120	11900	5240	1190	2720	420	311	157	501
10	682	1120	2450	1490	9120	4180	1430	2180	406	303	155	832
11	682	997	2910	2110	8140	3500	1680	1850	384	327	152	616
12	676	913	3620	1760	9620	3050	2030	1620	371	359	152	496
13	655	850	3210	1690	13500	2690	3390	1460	367	339	160	420
14	635	796	2940	1640	12200	2390	4670	1330	371	307	162	363
15	620	754	3220	1730	8620	2300	3910	1130	375	284	171	347
16	605	808	2970	1630	6380	2520	3240	1000	384	267	192	331
17	580	2000	2870	1560	5770	2270	3220	941	420	242	198	315
18	565	2300	2910	1500	8480	2050	3150	885	456	222	201	311
19	556	3470	2580	1430	10400	1860	3100	826	424	219	213	299
20	552	3670	2310	1590	7890	1700	2860	790	406	207	284	288
21	547	2920	2180	2270	6220	1580	2520	754	397	201	351	284
22	548	2380	2520	3350	5100	1470	2190	706	371	201	331	281
23	534	1980	3450	2850	4530	1360	1960	664	347	198	323	274
24	516	1760	3660	2480	5030	1270	1770	652	343	198	315	274
25	507	1700	3860	2150	7960	1200	1590	628	319	195	307	277
26	498	1770	3290	1860	9680	1180	1450	622	303	192	277	263
27	484	1880	2900	1730	8840	1170	1340	628	284	192	256	253
28	484	2570	2550	1680	8090	1310	1250	676	277	189	242	253
29	525	3580	2160	1550	---	1240	1170	676	274	177	239	260
30	718	5620	1720	1410	---	1180	1090	622	288	180	239	260
31	700	---	1520	1160	---	1200	---	580	---	177	235	---
TOTAL	20526	58431	112600	51450	211526	112370	60860	38044	11854	8801	6645	11945
MEAN	662	1948	3632	1660	7555	3625	2029	1227	395	284	214	398
MAX	1080	5620	12400	3350	17400	13800	4670	3350	540	610	351	857
MIN	484	543	1520	1020	976	1170	1090	580	274	177	152	249
CFSM	.74	2.18	4.06	1.86	8.44	4.05	2.27	1.37	.44	.32	.24	.45
IN.	.85	2.43	4.68	2.14	8.79	4.67	2.53	1.58	.49	.37	.28	.50
AC-FT	40710	115900	223300	102100	419600	222900	120700	75460	23510	17460	13180	23690

CAL YR 1978 TOTAL 720291 MEAN 1973 MAX 12400 MIN 253 CFSM 2.20 IN 29.94 AC-FT 1429000
WTR YR 1979 TOTAL 705052 MEAN 1932 MAX 17400 MIN 152 CFSM 2.16 IN 29.30 AC-FT 1398000

1203100 CHEHALIS RIVER AT PORTER, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 46°56'17", long 123°18'45", on north line of NE¼ sec.28, T.17 N., R.5 W., Grays Harbor County, Hydrologic Unit 17100103, at downstream end of left bank bridge pier, 30 ft (9.1 m) downstream from Porter Creek, 0.1 mi (0.2 km) west of Porter, and at mile 33.3 (53.6 km).

DRAINAGE ARLA.--1,294 mi² (3,351 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1952 to September 1972, water years 1973-75 (annual maximum), May 1975 to current year.

REVISED RECORDS.--WSP 1716: Drainage area. WSP 1932: 1954, 1956, 1960(M).

GAGE.--Water-stage recorder. Datum of gage is 23.64 ft (7.205 m), National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records excellent. Minor effect from regulation on Skookumchuck River by Skookumchuck Dam since January 1971. Up to 30 ft³/s (0.85 m³/s) of Skookumchuck River is consumptively used at Centralia steam generating plant. Many small diversions for irrigation and domestic use above station, including about 7 ft³/s (0.20 m³/s) for municipal water supply for Centralia and Chehalis.

AVERAGE DISCHARGE.--24 years (water years 1953-72, 1976-79), 4,162 ft³/s (117.9 m³/s), 43.68 in/yr (1,109 mm/yr), 3,015,000 acre-ft/yr (3,720 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,600 ft³/s (1,570 m³/s) Jan. 22, 1972, gage height, 23.88 ft (7.279 m); minimum, 164 ft³/s (4.64 m³/s) Oct. 17, 1952, gage height, 2.25 ft (0.686 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 28, 1937, reached a stage of 24.7 ft (7.53 m), from levels by Grays Harbor County.

Flood of December 1933 reached a stage of 23.13 ft (7.050 m), from river profile by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 20,000 ft³/s (566 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 9	0300	*22,300	632	*19.46	5.931

Minimum discharge, 287 ft³/s (8.13 m³/s) Aug. 12, 13, gage height. 2.94 ft (0.896 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1650	825	12300	2530	1940	10300	2040	1710	835	694	329	382
2	1530	750	14300	2510	1850	8420	2090	1630	790	775	323	410
3	1400	890	10900	2450	1790	7100	2270	1570	745	875	317	554
4	1290	2400	8340	2280	1990	7860	2290	1540	715	710	311	960
5	1200	4650	7060	2140	2780	13700	2200	1830	715	622	311	1010
6	1130	3300	5910	1820	5990	18200	2110	2700	720	566	314	795
7	1070	2510	5010	1660	15100	17200	1990	3540	730	530	308	658
8	1020	2190	4350	1710	20500	12900	1920	3940	702	514	302	602
9	985	2000	3930	1840	20500	9520	1930	3530	674	498	299	715
10	960	1750	3810	2190	14600	7560	2110	3020	658	514	296	955
11	950	1510	4130	2930	12300	6300	2390	2640	638	514	293	900
12	930	1370	5140	2820	12900	5460	2830	2360	622	546	290	706
13	900	1260	4910	2650	15900	4830	3980	2160	614	534	290	610
14	860	1160	4540	2620	17100	4320	5830	2000	622	506	302	542
15	835	1090	4600	2650	14200	4040	5520	1800	642	470	314	498
16	820	1440	4480	2630	10600	4060	4690	1590	650	449	320	482
17	800	2300	4300	2520	9040	3850	4370	1480	678	431	332	466
18	770	3320	4330	2420	11200	3530	4300	1400	702	403	332	456
19	755	3900	4000	2340	13700	3240	4200	1310	694	393	350	449
20	755	5030	3640	2540	12300	3010	4010	1240	650	382	372	442
21	745	4260	3410	3340	9740	2820	3660	1180	634	372	442	435
22	725	3540	3490	4710	8100	2650	3260	1110	602	368	470	428
23	705	3010	4360	4460	7040	2480	2980	1060	570	368	456	421
24	695	2660	4950	3930	7270	2340	2730	1040	546	368	442	414
25	655	2510	5430	3520	9440	2230	2520	1000	526	365	435	417
26	646	2540	4980	3110	12400	2150	2330	965	502	362	414	414
27	630	2670	4430	2840	12800	2110	2180	945	490	356	393	403
28	630	3130	3960	2710	11900	2150	2040	955	478	356	379	407
29	725	4520	3490	2550	---	2180	1920	995	474	350	368	403
30	800	6490	3000	2350	---	2080	1810	940	498	341	368	410
31	925	---	2570	2140	---	2050	---	885	---	338	372	---
TOTAL	28491	78975	164050	82910	294970	180640	88500	54065	19116	14870	10844	16744
MEAN	919	2633	5292	2675	10530	5827	2950	1744	637	480	350	558
MAX	1650	6490	14300	4710	20500	18200	5830	3940	835	875	470	1010
MIN	630	750	2570	1660	1790	2050	1810	885	474	338	290	382
CFSM	.71	2.04	4.09	2.07	8.14	4.50	2.28	1.35	.49	.37	.27	.43
IN.	.82	2.27	4.72	2.38	8.48	5.19	2.54	1.55	.55	.43	.31	.48
AC-FT	56510	156600	325400	164500	585100	358300	175500	107200	37920	29490	21510	33210

CAL YR 1978 TOTAL 1071753 MEAN 2936 MAX 14300 MIN 365 CFSM 2.27 IN 30.81 AC-FT 2126000
WTR YR 1979 TOTAL 1034175 MEAN 2833 MAX 20500 MIN 290 CFSM 2.19 IN 29.73 AC-FT 2051000

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-73, 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1959 to September 1960.
pH: July 1959 to September 1960.
WATER TEMPERATURES: July 1959 to September 1960, October 1961 to July 1972.
SUSPENDED SEDIMENT: October 1961 to September 1971.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
OCT , 1978 11...	1400	950	90	7.0	13.4	2.0	9.7	K18	12	27	0
NOV 02...	1200	745	66	7.4	7.7	.60	10.8	19	8	32	0
DEC 05...	1505	6990	83	6.8	6.3	7.4	11.0	110	K700	22	1
JAN , 1979 03...	1100	2430	79	6.9	.6	2.3	13.5	3	<1	26	1
FEB 27...	1130	12700	51	7.1	6.8	10	11.2	160	370	23	7
MAR 22...	0930	2670	80	7.4	9.4	4.1	10.4	8	24	30	5
APR 16...	1100	4690	68	7.2	8.4	5.3	10.6	K150	89	21	5
MAY 14...	1010	2010	70	7.3	15.0	3.1	9.8	18	2	26	5
JUN 18...	1115	706	92	7.8	16.0	1.7	10.8	44	6	33	0
JUL 19...	1100	393	103	7.4	22.3	1.0	7.5	--	8	34	2
AUG 09...	1100	299	101	7.5	19.5	1.4	8.5	44	37	34	3
SEP 19...	1240	449	100	7.4	18.0	1.4	8.6	45	150	34	1

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)
OCT , 1978 11...	6.9	2.4	5.4	30	.5	.6	30	5.1	4.3	.0	17
NOV 02...	8.0	3.0	6.8	31	.5	.9	34	6.5	6.1	.0	18
DEC 05...	5.5	1.9	4.6	31	.4	.9	21	6.8	4.4	.0	15
JAN , 1979 03...	6.9	2.2	5.4	30	.5	.5	25	5.3	5.0	.0	18
FEB 27...	6.4	1.7	3.7	25	.3	.5	16	5.7	3.7	.0	14
MAR 22...	8.2	2.4	5.6	28	.4	.7	25	7.7	5.1	.0	16
APR 16...	5.6	1.8	4.9	32	.5	1.2	16	9.6	3.5	.1	15
MAY 14...	6.8	2.1	5.9	33	.5	.7	21	3.9	4.3	.1	14
JUN 18...	8.4	3.0	6.4	29	.5	.8	34	3.8	5.8	.1	16
JUL 19...	8.3	3.1	6.6	29	.5	1.0	32	4.2	6.6	.0	19
AUG 09...	8.3	3.2	6.7	29	.5	.8	31	9.6	6.6	.1	16
SEP 19...	8.8	3.0	7.6	32	.6	1.1	33	13	5.9	.1	18

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER QUALITY DATA

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)
OCT , 1978											
11...	59	60	.08	151	4	.33	.01	.27	.28	.00	.28
NOV											
02...	69	70	.09	139	3	.33	.01	.54	.55	.32	.23
DEC											
05...	58	52	.08	1100	15	1.2	.03	.42	.45	.10	.35
JAN , 1979											
03...	59	59	.08	307	8	.86	.01	.15	.16	.03	.13
FEB											
27...	53	45	.07	1020	28	1.0	.02	.25	.27	.13	.14
MAR											
22...	65	61	.09	469	33	.77	.06	.38	.44	.17	.27
APR											
16...	55	52	.07	696	54	.71	.01	.29	.30	.15	.15
MAY											
14...	61	58	.08	331	0	.45	.01	.20	.21	.00	.25
JUN											
18...	71	65	.10	135	0	.10	.09	.50	.59	.47	.12
JUL											
19...	68	68	.09	72.2	0	.02	.04	.38	.42	.31	.11
AUG											
09...	64	70	.09	51.7	0	.06	.00	.21	.21	.00	.23
SEP											
19...	83	79	.11	101	21	.54	.24	.13	.37	.00	.44

DATE	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1978										
11...	.61	2.7	.050	.050	--	3.5	.3	5	13	87
NOV										
02...	.88	3.9	.060	.050	2.5	--	--	4	8.0	87
DEC										
05...	1.7	7.3	.040	.020	3.8	--	--	19	359	72
JAN , 1979										
03...	1.0	4.5	.030	.010	--	1.6	.5	5	33	87
FEB										
27...	1.3	5.6	.060	.040	--	--	--	25	857	89
MAR										
22...	1.2	5.4	.020	.010	2.9	--	--	7	58	99
APR										
16...	1.0	4.5	.020	.020	--	3.2	.3	11	139	86
MAY										
14...	.66	2.9	.030	.020	2.7	--	--	4	22	88
JUN										
18...	.69	3.1	.030	.010	--	--	--	4	7.6	96
JUL										
19...	.44	1.9	.050	.020	--	2.9	.7	4	4.2	91
AUG										
09...	.27	1.2	.050	.020	2.4	--	--	3	2.4	88
SEP										
19...	.91	4.0	.040	.030	3.8	--	--	4	4.8	94

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM SUS- PENDED RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
OCT , 1978										
11...	1400	0	0	0	0	0	0	0	<1	0
JAN , 1979										
03...	1100	0	0	0	0	3	1	0	<1	0
APR										
16...	1100	0	0	0	0	9	1	0	3	0
JUL										
19...	1100	1	0	0	0	5	0	0	2	0

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

WATER QUALITY DATA

DATE	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)
OCT , 1978										
11...	0	0	0	0	<1	5	2	3	540	220
JAN , 1979										
03...	0	0	2	0	<3	19	16	3	490	310
APR										
16...	0	0	0	0	<3	5	6	1	850	710
JUL										
19...	0	0	0	0	<3	5	4	1	230	190

DATE	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG)	MERCURY DISSOLVED (UG/L AS HG)
OCT , 1978										
11...	320	4	4	0	20	10	10	.0	.0	.0
JAN , 1979										
03...	180	16	16	0	40	20	20	.0	.0	.0
APR										
16...	140	14	14	0	30	20	10	.0	.0	.0
JUL										
19...	40	8	3	5	40	30	7	.1	.1	.0

DATE	SELENIUM, TOTAL (UG/L AS SE)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)
OCT , 1978									
11...	0	0	0	0	0	0	20	10	10
JAN , 1979									
03...	0	0	0	1	1	0	10	5	5
APR									
16...	0	0	0	0	0	0	10	0	10
JUL									
19...	0	0	0	0	0	0	10	7	<3

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	NOV 2,78	MAR 22,79	MAY 14,79	JUN 18,79
TIME	1200	0930	1010	1115
TOTAL CELLS/ML	1900	200	860	10000
DIVERSITY: DIVISION	0.9	1.2	0.0	1.3
.CLASS	0.9	1.2	0.0	1.3
..ORDER	1.8	1.6	1.0	1.7
...FAMILY	2.5	3.1	1.3	1.7
....GENUS	2.6	3.2	1.6	1.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...COELASTRACEAE								
....COELASTRUM	--	-	--	-	--	-	--	-
...MICRACTINIACEAE								
....GOLENKINIA	--	-	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	--	-	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	14	1	--	-	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-
....FRANCEIA	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-
...SCENEDESMACEAE								
....CRUCIGENIA	--	-	--	-	--	-	270	3
....SCENEDESMUS	--	-	--	-	--	-	670	7
....TETRASTRUM	--	-	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	14	1	35#	17	--	-	4000#	40
...VOLVOCACEAE								
....GONIUM	--	-	--	-	--	-	--	-
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	42	2	15	7	13	1	3600#	36
....MELOSIRA	120	6	--	-	390#	45	--	-
....STEPHANODISCUS	--	-	--	-	52	6	--	-
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	14	1	--	-	--	-	--	-
....COCCONEIS	83	4	15	7	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	--	-
...CYMBELLACEAE								
....CYMBELLA	69	4	25	13	--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	--	-	20	10	370#	43	--	-
....FRAGILARIA	--	-	--	-	--	-	--	-
....SYNEDRA	42	2	5	2	--	-	67	1
...GOMPHONEMATACEAE								
....GOMPHONEMA	28	1	15	7	13	1	--	-
...NAVICULACEAE								
....NAVICULA	55	3	25	13	13	1	--	-
...NITZSCHIACEAE								
....NITZSCHIA	83	4	15	7	13	1	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....ANACYSTIS	940#	50	--	-	--	-	540	5
..HORMOGONALES								
...OSCILLATORIACEAE								
....LYNGBYA	290	15	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-
...RIVULARIACEAE								
....RAPHIDIOPSIS	120	6	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
.EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....TRACHELOMONAS	--	-	30	15	--	-	67	1
PYRRHOPHYTA (FIRE ALGAE)								
.DINOPHYCEAE								
..PERIDINIALES								
...GLENODINIACEAE								
....GLENODINIUM	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

12031000 CHEHALIS RIVER AT PORTER, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	JUL 19,79	AUG 9,79	SEP 19,79
TIME	1100	1100	1240
TOTAL CELLS/ML	9600	1000	710
DIVERSITY: DIVISION	0.4	1.3	1.4
.CLASS	0.4	1.3	1.4
..ORDER	1.0	1.6	2.2
...FAMILY	1.9	1.8	2.8
....GENUS	2.8	2.3	3.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...COELASTRACEAE						
....COELASTRUM	560	6	--	-	--	-
...MICRACTINIACEAE						
....GOLENKINIA	210	2	--	-	--	-
....MICRACTINIUM	280	3	--	-	--	-
...OOCYSTACEAE						
....ANKISTRODESMUS	1800#	19	190#	19	14	2
....CHLORELLA	3800#	40	--	-	--	-
....DICTYOSPHAERIUM	630	7	100	10	--	-
....FRANCEIA	--	-	77	7	--	-
....SELENASTRUM	--	-	--	-	14	2
...SCENEDESMACEAE						
....CRUCIGENIA	--	-	--	-	--	-
....SCENEDESMUS	140	1	--	-	--	-
....TETRASTRUM	280	3	--	-	--	-
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	1000	11	39	4	27	4
...VOLVOCACEAE						
....GONIUM	--	-	51	5	--	-
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	350	4	--	-	69	10
....MELOSIRA	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	--	-	--	-	27	4
....COCCONEIS	70	1	13	1	41	6
....RHOICOSPHENIA	70	1	--	-	--	-
...CYMBELLACEAE						
....CYMBELLA	70	1	--	-	55	8
...FRAGILARIACEAE						
....ASTERIONELLA	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	14	2
....SYNEDRA	70	1	13	1	--	-
...GOMPHONEMATACEAE						
....GOMPHONEMA	70	1	13	1	14	2
...NAVICULACEAE						
....NAVICULA	--	-	--	-	--	-
...NITZSCHIACEAE						
....NITZSCHIA	--	-	26	2	82	12
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....ANACYSTIS	--	-	510#	49	69	10
..HORMOGONALES						
...OSCILLATORIACEAE						
....LYNGBYA	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	270#	38
...RIVULARIACEAE						
....RAPHIDIOPSIS	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....TRACHELOMONAS	--	-	--	-	14	2
PYRRHOPHYTA (FIRE ALGAE)						
.DINOPHYCEAE						
..PERIDINIALES						
...GLENODINIACEAE						
....GLENODINIUM	70	1	--	-	--	-

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

CHEHALIS RIVER BASIN

12035000 SATSOP RIVER NEAR SATSOP, WA

LOCATION.--Lat 47°00'03", long 123°29'37", in NE¼SE¼ sec.36, T.18 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, in west pier of bridge on old U.S. Highway 410, 0.6 mi (1.0 km) west of Satsop, and 2.3 mi (3.7 km) upstream from mouth.

DRAINAGE AREA.--299 mi² (774 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1929 to current year.

REVISED RECORDS.--WSP 1286: 1930-35(M), 1937(M). WSP 1716: Drainage area. WSP 1932: 1945, 1949(M), 1951(M), 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 19, 1938, nonrecording gage at site 60 ft (18 m) upstream at datum 20.9 ft (6.37 m) higher.

REMARKS.--Water-discharge records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--50 years, 2,016 ft³/s (57.09 m³/s), 91.56 in/yr (2,326 mm/yr), 1,461,000 acre-ft/yr, (1,800 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 46,600 ft³/s (1,320 m³/s) Jan. 22, 1935, elevation, 38.9 ft (11.86 m), from floodmarks, present datum; minimum, 166 ft³/s (4.70 m³/s) Sept. 21, 1938; minimum elevation, 21.66 ft (6.602 m), present datum, Sept. 3-6, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1909 reached a stage of 37.1 ft (11.31 m), from high-water mark, at railroad bridge 300 ft (91 m) downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,500 ft³/s (382 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 25	2400	17,900	507	31.24	9.522	Mar. 5	0600	*30,700	869	*34.24	10.436

Minimum discharge, 233 ft³/s (6.60 m³/s) Aug. 29, 30, gage height, 22.34 ft (6.809 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1100	525	2730	1110	920	4480	960	834	511	471	270	280
2	1080	539	2240	1100	888	3700	928	811	498	458	270	408
3	1080	751	2190	1030	888	3360	904	788	484	378	270	505
4	944	3410	2620	984	920	9250	896	834	478	349	266	826
5	896	2100	2230	928	1970	22700	872	1180	505	338	266	601
6	857	1450	1880	888	4700	13500	849	1630	498	327	261	471
7	788	1210	1610	857	9220	8040	818	1960	465	322	261	788
8	751	2110	1440	826	5040	6140	849	1600	452	333	256	1050
9	729	1650	1460	803	6530	4780	920	1410	439	338	256	766
10	722	1350	1540	1100	5240	3090	904	1240	433	361	252	608
11	818	1170	3680	1170	4670	3320	952	1130	420	553	252	511
12	751	1050	3120	1030	7540	2880	1040	1040	408	539	252	452
13	700	960	2470	1010	10100	2560	3630	984	408	471	247	414
14	672	888	2760	1000	6460	2300	3060	936	408	426	256	383
15	650	849	2750	1010	4560	2210	2160	888	401	389	261	361
16	636	2250	2480	960	3700	2050	1760	849	414	372	256	344
17	615	3090	2390	936	4240	1860	1580	811	420	355	252	338
18	601	2470	2350	904	7490	1730	1510	781	401	338	256	332
19	588	2830	2040	1010	5760	1620	1410	751	383	327	280	327
20	581	2310	1830	1510	4430	1530	1330	729	378	322	280	322
21	574	1900	1770	3470	3630	1450	1250	700	372	316	280	316
22	546	1630	2150	2680	3050	1380	1180	679	361	311	261	316
23	539	1430	2440	2110	2750	1310	1110	657	355	311	252	311
24	553	1320	2680	1880	3160	1260	1080	643	349	306	247	301
25	532	1290	2300	1550	11900	1210	1030	615	338	306	243	296
26	511	1220	2040	1390	12400	1180	976	601	333	301	238	296
27	498	1170	1880	1290	7540	1140	944	601	327	296	238	296
28	505	1370	1590	1190	5680	1090	904	588	327	290	238	306
29	594	1390	1420	1100	---	1050	880	567	327	285	238	296
30	601	1830	1290	1030	---	1030	857	546	349	280	238	296
31	553	---	1180	976	---	992	---	532	---	275	252	---
TOTAL	21565	47512	66550	38832	145484	115792	37543	27915	12242	11044	7945	13117
MEAN	696	1584	2147	1253	5196	3735	1251	900	408	356	256	437
MAX	1100	3410	3680	3470	12400	22700	3630	1960	511	553	280	1050
MIN	498	525	1180	803	888	992	818	532	327	275	238	280
CFSM	2.33	5.30	7.18	4.19	17.4	12.5	4.18	3.01	1.37	1.19	.86	1.46
IN.	2.68	5.91	8.28	4.83	18.10	14.41	4.67	3.47	1.52	1.37	.99	1.63
AC-FT	42770	94240	132000	77020	288600	229700	74470	55370	24280	21910	15760	26020

CAL YR 1978 TOTAL 562796 MEAN 1542 MAX 7210 MIN 351 CFSM 5.16 IN 70.02 AC-FT 1116000
WTR YR 1979 TOTAL 545541 MEAN 1495 MAX 22700 MIN 238 CFSM 5.00 IN 67.87 AC-FT 1082000

12035000 SATSOP RIVER NEAR SATSOP, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-71, 1975 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
09...	0940	728	67	6.6	11.7	15	1.0
NOV							
06...	0925	1470	68	6.9	7.4	10	2.0
DEC							
04...	1000	2690	58	7.2	7.5	25	3.0
JAN , 1979							
29...	1030	1110	48	7.2	2.0	10	1.0
FEB							
20...	0945	4480	51	6.9	5.0	15	4.0
MAR							
12...	0910	2930	53	7.1	7.2	25	3.0
APR							
16...	1030	1740	57	7.2	7.4	15	2.0
MAY							
21...	0930	707	72	7.3	12.2	20	5.0
JUN							
18...	0920	401	60	7.1	12.5	15	2.0
JUL							
09...	0915	338	76	7.5	15.1	10	2.0
AUG							
06...	0925	265	78	7.4	14.6	10	1.0
SEP							
04...	0800	224	99	7.2	14.1	25	4.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
09...	9.9	.22	.01	.020	.00	.00
NOV						
06...	11.3	.47	.01	.020	.01	.03
DEC						
04...	11.8	.56	.02	.020	.01	.03
JAN , 1979						
29...	12.6	.41	.08	.010	.00	.00
FEB						
20...	12.3	.55	.01	.020	.01	.03
MAR						
12...	12.0	.36	.01	.010	.01	.03
APR						
16...	--	.40	.00	.010	--	--
MAY						
21...	11.1	.45	.06	.020	.00	.00
JUN						
18...	10.4	.18	.03	<.010	.02	.06
JUL						
09...	9.5	.15	.03	.020	.01	.03
AUG						
06...	9.8	.16	.01	.020	.00	.00
SEP						
04...	7.8	.15	.04	.010	.01	.03

12035100 CHEHALIS RIVER NEAR MONTESANO, WA

LOCATION.--Lat 46°57'45", long 123°36'12", near center of N½ sec.18, T.17 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, at State Highway 107 bridge, 0.1 mi (0.2 km) upstream from Wynoochee River, 1.3 mi (2.1 km) south of Montesano, and at mile 13.2 (21.2 km).

DRAINAGE AREA.--1,782 mi² (4,615 km²).

PERIOD OF RECORD.--Water years 1970-71, 1977 to current year.

REMARKS.--Sampling site has tidal backwater effect most of time; discharge not determined.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978												
09...	1020	77	7.2	13.0	35	2.0	9.0	.29	.03	.040	.01	.03
NOV												
06...	0950	78	7.0	7.9	65	11	10.4	.05	.03	.080	.01	.03
DEC												
04...	1030	69	7.0	7.6	55	8.0	11.1	1.2	.04	.040	.00	.00
JAN , 1979												
29...	1130	57	7.2	2.7	25	3.0	12.6	.73	.02	.030	.02	.06
FEB												
20...	1015	35	6.9	5.6	25	10	12.7	.98	.02	.020	.01	.03
MAR												
12...	0950	65	7.0	7.9	45	6.0	10.8	.71	.02	.020	.01	.03
APR												
16...	1055	64	7.2	8.7	35	7.0	10.9	.64	.01	.020	.05	.15
MAY												
21...	1005	80	7.3	16.0	25	5.0	10.2	.32	.06	.020	.00	.00
JUN												
18...	0945	84	7.3	15.4	25	2.0	10.3	.02	.07	.010	.00	.00
JUL												
09...	1010	88	7.3	17.9	35	2.0	8.9	.19	.03	.020	.01	.03
AUG												
06...	1000	99	7.5	18.9	20	4.0	9.5	.01	.01	.030	.00	.00
SEP												
04...	0930	90	7.4	16.0	25	3.0	8.0	.10	.03	.020	.01	.03

12035380 WYNOOCHEE LAKE NEAR GRISDALE, WA

LOCATION.--Lat 47°23'08", long 123°36'16", in NE¼NW¼ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, in monolith No. 6, near center line axis of Wynoochee Dam on Wynoochee River, 2.0 mi (3.2 km) north of Grisdale, at river mile 51.8 (83.3 km).

DRAINAGE AREA.--41.0 mi² (106.2 km²).

PERIOD OF RECORD.- October 1972 to current year.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to May 22, 1973, staff gage on upstream face of dam.

REMARKS.--Reservoir is formed by concrete gravity type dam with gate-type spillway; construction began in 1969; completed in 1972. Usable capacity, 67,288 acre-ft (83.0 hm³) between elevation 690 ft (210.3 m), sluice invert level, and 800 ft (243.8 m), full pool elevation. Dead storage, 2,117 acre-ft (2.61 hm³) below elevation 690 ft (210.3 m). Figures given herein represent total contents. Water is used for flood control, water supply, and recreation.

COOPERATION.--Daily elevations at 0800, monthend elevations at 2400, and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 69,610 acre-ft (85.8 hm³/yr), June 11, 1974, elevation, 800.18 ft (243.895 m); minimum observed, 12,210 acre-ft (15.1 hm³/yr) Oct. 31, 1972, elevation, 725.7 ft (221.19 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 58,910 acre-ft (72.6 hm³/yr) June 6, elevation 790.24 ft (240.865 m); minimum observed, 34,338 acre-ft (42.3 hm³/yr) Dec. 20, elevation, 762.50 ft (232.410 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	778.66	47,727	----
Oct. 31	763.58	35,166	-12,561
Nov. 30	764.33	35,745	+579
Dec. 31	764.50	35,877	+132
CAL YR 1978	----	----	+611
Jan. 31	766.12	37,145	+1,268
Feb. 28	764.87	36,165	-980
Mar. 31	766.80	37,683	+1,518
Apr. 30	777.06	46,291	+8,608
May 31	789.99	58,654	+12,363
June 30	787.01	55,653	-3,001
July 31	785.54	54,206	-1,447
Aug. 31	777.01	46,247	-7,959
Sept. 30	777.50	46,683	+436
WTR YR 1979	----	----	-1,044

12035400 WYNOOCHEE RIVER NEAR GRISDALE, WA

LOCATION.--Lat 47°22'50", long 123°36'31", in NW¼SW¼ sec.20, T.22 N., R.7 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, on right bank 0.5 mi (0.8 km) downstream from Wynoochee Dam, 1.7 mi (2.7 km) north of Grisdale, 1.7 mi (2.7 km) downstream from Scatter Creek, and at mile 51.3 (82.5 km).

DRAINAGE AREA.--41.3 mi² (107.0 km²).

PERIOD OF RECORD.--October 1965 to current year. Sediment records February 1966 to May 1967.

GAGE.--Water-stage recorder. Altitude of gage is 630 ft (192 m), from topographic map. Prior to Nov. 3, 1967, at site 1,500 ft (457 m) upstream at different datum.

REMARKS.--Records good. Since August 1972, flow regulated by Wynoochee Lake (see sta 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction. No diversion above station.

AVERAGE DISCHARGE.--14 years, 534 ft³/s (15.12 m³/s), 175.59 in/yr (4,460 mm/yr), 386,900 acre-ft/yr (477 hm³/yr), adjusted for storage in Wynoochee Lake since October 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,800 ft³/s (334 m³/s) Dec. 12, 1966, gage height, about 18.0 ft (5.49 m), computed from graph based on gage readings, site and datum then in use; minimum, 0.9 ft³/s (0.025 m³/s) Sept. 10, 12, 1974, gage height, 0.06 ft (0.018 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,960 ft³/s (83.8 m³/s) Mar. 5, 6, gage height, 4.36 ft (1.329 m); minimum, 168 ft³/s (4.76 m³/s) Oct. 31, gage height, 1.24 ft (0.378 m), minimum daily, 189 ft³/s (5.35 m³/s) Mar. 30 to Apr. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	504	225	425	212	212	828	189	205	212	205	205	202
2	488	225	425	212	212	570	189	205	212	205	202	202
3	471	225	425	212	212	570	189	205	208	205	202	202
4	455	231	425	212	212	589	189	205	208	205	202	205
5	510	231	292	212	212	2030	191	208	208	205	202	202
6	510	396	212	212	221	2900	191	212	208	205	202	205
7	482	742	212	212	712	2860	191	218	208	205	202	205
8	477	924	212	212	994	2530	191	221	208	205	202	205
9	477	698	212	212	1640	1300	191	221	208	205	202	208
10	391	522	215	212	1810	876	191	218	208	205	200	208
11	333	522	600	212	1790	876	191	215	208	208	200	208
12	333	510	879	212	1760	1030	194	215	208	208	200	260
13	425	311	585	212	1790	976	197	218	208	208	200	311
14	477	212	644	212	1310	705	197	208	208	208	202	311
15	477	212	597	212	884	425	197	208	208	208	205	311
16	450	324	506	212	622	482	197	212	208	208	205	311
17	405	387	506	208	493	522	197	212	208	208	202	311
18	369	387	506	208	493	522	197	212	208	208	205	311
19	342	387	506	208	493	319	200	212	208	205	202	311
20	324	387	332	212	705	202	200	212	208	208	202	311
21	307	387	208	212	860	205	200	212	208	205	202	311
22	295	275	212	212	860	205	200	212	208	205	202	307
23	319	212	212	212	649	205	200	212	208	205	202	307
24	333	212	212	212	534	205	200	212	205	205	202	307
25	319	212	215	212	546	205	200	212	205	205	202	315
26	311	212	384	212	1670	205	202	212	205	205	202	315
27	303	212	506	212	2540	205	202	212	205	205	202	315
28	299	212	506	212	1810	205	202	212	205	205	202	315
29	299	212	334	212	---	200	202	212	205	205	202	315
30	268	287	212	212	---	189	202	212	205	205	202	---
31	225	---	212	212	---	189	---	212	---	205	202	---
TOTAL	11978	10491	11929	6560	26254	23330	5879	6574	6227	6382	6266	8122
MEAN	386	350	385	212	938	753	196	212	208	206	202	271
MAX	510	924	879	212	2540	2900	202	221	212	208	205	315
MIN	225	212	208	208	212	189	189	205	205	205	200	202
AC-FT	23760	20810	23660	13010	52070	46280	11660	13040	12350	12660	12430	16110
†	-12,561	+579	+132	+1,268	-980	+1,518	+8,608	+12,363	-3,001	-1,447	-7,959	+436
MEAN‡	182	360	387	232	920	777	341	413	157	182	73	278
CFSM‡	4.41	8.72	9.37	5.62	22.3	18.8	8.26	10.0	3.80	4.41	1.77	6.73
IN‡	5.08	9.71	10.80	6.48	23.19	21.70	9.20	11.53	4.24	5.09	2.03	7.51
AC-FT‡	11,200	21,390	23,790	14,280	51,090	47,800	20,270	25,400	9,349	11,210	4,471	16,550

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CAL YR 1978:   TOTAL  144,356   MEAN    395    MAX    1,940    MIN   156   AC-FT  286,300
     DO.....:  MEAN‡      396   CFSM‡  9.59    IN‡   130.25    AC-FT‡  286,900
WTR YR 1979:   TOTAL  129,992   MEAN    356    MAX    2,900    MIN   189   AC-FT  257,800
     DO.....:  MEAN‡      355   CFSM‡  8.60    IN‡   116.59    AC-FT‡  256,800
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† Change in contents, in acre-feet, in Wynoochee Lake.
‡ Adjusted for change in reservoir contents.

12035450 BIG CREEK NEAR GRISDALE, WA

LOCATION.--Lat 47°22'28", long 123°38'08", in SE¼SE¼ sec.24, T.22 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, Olympic National Forest, on left bank 280 ft (85 m) upstream from road bridge, 1.5 mi (2.4 km) northwest of Grisdale, and 0.6 mi (1.0 km) upstream from mouth.

DRAINAGE AREA.--9.57 mi² (24.79 km²).

PERIOD OF RECORD.--August 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft (183 m), from topographic map.

REMARKS.--Records good except those for period of shifting control Dec. 11 to Mar. 11, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--7 years, 112 ft³/s (3.17 m³/s), 158.93 in/yr (4,037 mm/yr), 81,140 acre-ft/yr (100 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,760 ft³/s (78.2 m³/s) Dec. 26, 1975, gage height, 8.89 ft (2.710 m), from rating curve extended above 1,500 ft³/s (42.5 m³/s); minimum, 9.9 ft³/s (0.28 m³/s) part or all of each day Aug. 15-23, 1977.

EXTREMES FOR CURRENT YEAR.-- Peak discharges above base of 1,100 ft³/s (31.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³.s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 25	1700	1,370	38.8	6.86	2.091	Mar. 4	2000	*1,990	56.4	*7.87	2.399

Minimum discharge, 11 ft³/s (0.31 m³/s) part or all of each day Aug. 25-31; gage height, 2.83 ft (0.863 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	24	108	65	47	147	39	41	26	26	15	14
2	52	36	77	62	44	123	37	40	25	20	14	30
3	49	111	99	59	44	123	36	37	24	17	14	85
4	45	268	102	56	47	1080	36	47	23	16	14	123
5	43	86	77	53	177	745	35	128	27	15	13	121
6	42	62	66	51	456	492	33	217	23	15	13	69
7	39	95	59	49	298	358	32	180	21	15	13	52
8	38	155	55	47	241	241	37	140	21	26	12	162
9	37	86	59	45	424	187	40	114	20	23	12	170
10	41	68	131	71	217	152	41	93	19	78	12	99
11	44	59	292	60	220	135	44	80	19	85	12	72
12	38	52	151	57	472	119	121	70	18	67	12	58
13	37	48	115	56	565	106	349	65	18	49	12	50
14	35	44	197	53	286	95	185	60	18	40	12	44
15	34	44	143	52	185	101	126	55	17	35	12	41
16	33	143	125	49	151	91	101	52	18	32	12	37
17	31	137	125	48	274	83	89	47	17	30	12	35
18	30	95	111	47	379	76	89	46	16	27	14	33
19	29	92	97	55	211	70	83	44	16	25	14	32
20	28	74	90	187	157	67	76	41	16	24	12	31
21	27	65	90	162	133	62	70	39	15	23	13	28
22	27	59	197	104	117	58	65	37	15	21	13	27
23	28	53	170	84	110	55	63	36	15	20	12	27
24	28	50	217	74	195	52	69	35	15	19	12	25
25	26	47	141	66	1080	50	60	33	15	19	12	25
26	25	44	115	63	468	50	55	32	14	18	11	24
27	24	45	101	59	265	47	52	31	14	17	11	24
28	25	55	88	55	192	44	49	30	14	16	11	24
29	28	50	79	52	---	43	46	28	14	16	11	23
30	26	106	73	49	---	41	43	27	17	15	11	21
31	25	---	68	48	---	40	---	27	---	15	11	---
TOTAL	1070	2353	3618	2038	7455	5133	2201	1952	550	864	384	1606
MEAN	34.5	78.4	117	65.7	266	166	73.4	63.0	18.3	27.9	12.4	53.5
MAX	56	268	292	187	1080	1080	349	217	27	85	15	170
MIN	24	24	55	45	44	40	32	27	14	15	11	14
CFSM	3.61	8.19	12.2	6.87	27.8	17.3	7.67	6.58	1.91	2.92	1.30	5.59
IN.	4.16	9.15	14.06	7.92	28.98	19.95	8.55	7.59	2.14	3.36	1.49	6.24
AC-FT	2120	4670	7180	4040	14790	10180	4370	3870	1090	1710	762	3190

CAL YR 1978 TOTAL 30337 MEAN 83.1 MAX 637 MIN 11 CFSM 8.68 IN 117.91 AC-FT 60170
WTR YR 1979 TOTAL 29224 MEAN 80.1 MAX 1080 MIN 11 CFSM 8.37 IN 113.58 AC-FT 57970

12036000 WYNOOCHEE RIVER ABOVE SAVE CREEK, NEAR ABERDEEN, WA

LOCATION.--Lat 47°17'57", long 123°39'07", in NE¼NE¼ sec.23, T.21 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on right bank 0.8 mi (1.3 km) upstream from Save Creek, 2.5 mi (4.0 km) downstream from Oxbow Dam site, 11.0 mi (17.7 km) downstream from Wynoochee Dam, 23.5 mi (37.8 km) northeast of city hall in Aberdeen, and at mile 40.6 (65.3 km).

DRAINAGE AREA.--74.1 mi² (191.9 km²).

PERIOD OF RECORD.--May 1925 to current year. Published as "at Oxbow, near Aberdeen" 1925-52, where drainage area was 70.7 mi² (183.1 km²). Records published for both sites October 1951 to October 1952.

REVISED RECORDS.--WSP 1346: 1952. WSP 1736: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 401 ft (122.2 m) National Geodetic Vertical Datum of 1929, stadia traverse. Prior to Nov. 7, 1925, nonrecording gage at site 2.3 mi (3.7 km) upstream at different datum. Nov. 7, 1925, to Sept. 3, 1947, water-stage recorder at site 1.5 mi (2.4 km) upstream at datum 444.0 ft (135.33 m) National Geodetic Vertical Datum of 1929 (levels by city of Aberdeen). Sept. 4, 1947, to Oct. 13, 1952, water-stage recorder at site 2.5 mi (4.0 km) upstream at datum about 91 ft (27.7 m) higher. Oct. 5, 1951 to Sept. 30, 1976, water-stage recorder on left bank at same site and datum.

REMARKS.--Records excellent except those for period Feb. 28 to Mar. 30, which are good. Since August 1972, flow regulated by Wynoochee Lake (see sta 12035380) for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction. No diversion above station.

AVERAGE DISCHARGE.--54 years, 822 ft³/s (23.28 m³/s), 150.64 in/yr (3,826 mm/yr), 595,500 acre-ft/yr (734 hm³/yr), adjusted for storage in Wynoochee Lake since October 1972.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,600 ft³/s (668 m³/s) Dec. 9, 1956, gage height, 16.95 ft (5.166 m), from rating curve extended above 9,000 ft³/s (255 m³/s); minimum, 57 ft³/s (1.61 m³/s) Sept. 3, 4, 5, 1972, gage height, 4.43 ft (1.350 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,070 ft³/s (144 m³/s) Mar. 5, gage height, 9.02 ft (2.749 m); minimum, 252 ft³/s (7.14 m³/s) on all or part of day on Aug. 7-14, Aug. 24-Sept. 1, gage height, 5.01 ft (1.527 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	674	310	737	395	355	1340	320	320	300	300	260	256
2	646	345	667	390	350	1010	320	315	300	280	260	275
3	618	452	744	380	355	1130	315	315	295	275	260	360
4	590	848	751	375	365	1750	315	345	295	275	256	410
5	625	500	584	365	646	3450	310	476	315	265	256	416
6	639	542	446	360	1310	4350	305	660	295	265	256	340
7	597	960	422	355	1490	3710	305	625	295	265	256	310
8	590	1310	405	355	1620	3180	325	548	290	280	256	446
9	584	978	428	355	2530	1910	325	488	290	275	256	482
10	542	730	560	434	2420	1300	325	446	285	360	252	385
11	470	702	1200	390	2390	1210	330	410	285	370	252	340
12	446	674	1320	380	2960	1290	471	395	285	340	252	350
13	512	530	920	375	3070	1250	896	380	285	310	252	400
14	572	365	1120	370	2060	1020	604	365	285	300	256	390
15	572	375	1010	365	1360	709	494	350	285	290	256	385
16	548	695	848	360	1040	730	440	350	290	285	256	380
17	506	765	856	355	1340	751	416	340	285	280	256	380
18	458	688	816	355	1570	723	422	335	280	280	265	375
19	428	600	772	380	1180	553	405	335	280	275	265	375
20	416	632	639	604	1180	405	390	330	275	275	260	370
21	395	597	488	646	1280	395	375	325	275	270	260	370
22	380	506	681	512	1210	385	365	320	275	270	260	365
23	400	400	653	464	1010	380	360	320	275	270	256	365
24	416	390	716	428	1190	375	360	320	270	270	256	360
25	400	380	590	405	3450	365	350	315	270	265	252	370
26	385	370	639	400	3070	365	340	315	270	265	252	370
27	380	385	765	390	3400	360	335	315	265	265	252	370
28	380	405	737	375	2520	360	330	310	270	265	252	370
29	395	395	639	370	---	350	325	305	270	260	252	370
30	365	554	422	365	---	325	325	305	280	260	252	365
31	315	---	410	360	---	325	---	300	---	260	252	---
TOTAL	15244	17471	21985	12413	46721	35756	11498	11578	8515	8765	7934	11100
MEAN	492	582	709	400	1669	1153	383	373	284	283	256	370
MAX	674	1310	1320	646	3450	4350	896	660	315	370	265	482
MIN	315	310	405	355	350	325	305	300	265	260	252	256
AC-FT	30240	34650	43610	24620	92670	70920	22810	22960	16890	17390	15740	22020
†	-12,561	+579	+132	+1,268	-980	+1,518	+8,608	+12,363	-3,001	-1,447	-7,959	+436
MEAN‡	287	592	711	421	1,651	1,178	528	574	233	259	127	378
CFSM‡	3.87	7.99	9.60	5.68	22.3	15.9	7.13	7.75	3.14	3.50	1.71	5.10
IN.‡	4.47	8.91	11.07	6.55	23.20	18.33	7.95	8.94	3.51	4.03	1.97	5.68
AC-FT‡	17,680	35,230	43,740	25,890	91,690	72,440	31,420	35,320	13,890	15,940	7,781	22,460

CAL YR 1978: TOTAL 233,208 MEAN 639 MAX 2,590 MIN 285 AC-FT 462,600
DO.....: MEAN‡ 640 CFSM‡ 8.64 IN‡ 117.19 AC-FT‡ 463,200
WTR YR 1979: TOTAL 208,980 MEAN 573 MAX 4,350 MIN 252 AC-FT 414,500
DO.....: MEAN‡ 571 CFSM‡ 7.71 IN‡ 104.62 AC-FT‡ 413,500

† Change in contents, in acre-feet, in Wynoochee Lake, furnished by Corps of Engineers
‡ Adjusted for change in contents in Wynoochee Lake.8.64

12036650 ANDERSON CREEK NEAR MONTESANO, WA

LOCATION.--Lat 47°07'02", long 123°39'17", in SE¼NE¼ sec.22, T.19 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on right bank 70 ft (21 m) upstream from Wynoochee Valley road bridge, 9.6 mi (15.4 km) northwest of Montesano, and 1 mi (1.6 km) upstream from mouth.

DRAINAGE AREA.--2.72 mi² (7.04 km²).

PERIOD OF RECORD.--August 1972 to current year.

REVISED RECORDS.--WDR WA-78-1: 1976, 1977.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 150 ft (46 m), from topographic map.

REMARKS.--Records good except those for periods Mar. 8-16, Apr. 13-23, and Sept. 16-30, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--7 years, 13.7 ft³/s (0.388 m³/s), 68.55 in/yr (1,741 mm/yr), 9,947 acre-ft/yr (12.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 299 ft³/s (8.47 m³/s) Dec. 26, 1975, gage height, 8.46 ft (2.579 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 6	unknown	*169	4.79	*6.25	1.905	Mar. 4	unknown	166	4.70	6.20	1.890
Feb. 25	1815	154	4.36	6.00	1.829						

Minimum discharge, no flow Aug. 5-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	2.4	27	6.9	5.8	30	3.7	3.7	.96	7.7	.08	.64
2	7.3	3.7	23	6.5	5.5	23	3.7	3.5	1.1	1.6	.05	2.6
3	6.5	10	26	6.2	5.8	20	3.7	3.3	.74	.96	.08	9.2
4	6.2	29	27	5.5	6.2	94	3.9	4.2	.84	.64	.02	7.3
5	5.5	17	23	5.1	20	100	3.7	7.9	1.4	.55	.00	3.2
6	5.1	13	19	4.8	81	77	3.7	6.8	.96	.46	.00	1.6
7	4.5	12	15	4.5	99	53	3.4	6.3	.96	.38	.00	1.1
8	4.2	13	13	4.2	43	40	4.2	5.8	.96	.55	.00	2.7
9	4.2	11	13	4.2	37	30	5.1	5.4	1.1	.96	.00	7.7
10	4.2	10	15	10	32	23	5.8	5.0	1.3	3.4	.00	3.7
11	4.2	9.0	26	7.3	29	19	6.5	4.7	1.1	2.7	.00	2.4
12	3.7	8.1	24	6.9	54	16	15	4.4	1.3	2.0	.00	1.8
13	3.4	6.9	21	7.3	59	13	13	4.1	.74	1.6	.00	1.4
14	3.2	6.5	24	8.1	36	11	11	3.7	.74	1.3	.00	1.4
15	3.2	6.9	23	8.6	27	10	10	3.3	.96	1.1	.00	1.3
16	2.9	33	22	8.1	21	9.0	9.0	3.0	1.3	.84	.00	.84
17	2.9	31	21	8.1	22	8.1	8.5	2.8	.96	.74	.00	1.1
18	2.7	26	20	7.7	48	7.3	8.0	2.5	.96	.84	.00	1.1
19	2.7	30	18	9.5	41	6.5	7.5	2.2	.84	.84	.46	1.1
20	2.9	26	16	20	29	6.2	7.0	2.0	.64	.55	.74	.96
21	2.7	21	14	32	22	5.8	6.5	1.8	.64	.74	.96	1.3
22	2.4	17	13	26	16	5.5	6.0	1.8	.84	.64	1.4	.96
23	2.2	14	14	21	15	5.1	6.0	1.8	.74	.55	.84	.96
24	2.4	12	16	16	30	4.8	6.5	1.6	.74	.64	.55	.96
25	2.2	10	16	13	124	4.5	6.1	1.6	.64	.55	.30	.84
26	2.2	9.0	15	11	84	4.5	5.6	1.4	1.3	.64	.38	.96
27	2.0	8.6	13	9.5	58	4.2	5.0	1.8	1.4	.55	.38	.96
28	2.4	10	12	8.6	43	4.2	4.7	1.8	1.6	.38	.38	1.8
29	4.2	10	10	8.1	---	3.9	4.4	1.4	2.0	.23	.38	1.8
30	3.4	20	8.6	6.9	---	4.2	4.1	1.3	3.2	.08	.38	1.4
31	2.7	---	7.7	6.2	---	3.9	---	1.1	---	.05	.46	---
TOTAL	116.4	436.1	555.3	307.8	1093.3	646.7	191.3	102.0	32.96	34.76	7.84	65.08
MEAN	3.75	14.5	17.9	9.93	39.0	20.9	6.38	3.29	1.10	1.12	.25	2.17
MAX	8.1	33	27	32	124	100	15	7.9	3.2	7.7	1.4	9.2
MIN	2.0	2.4	7.7	4.2	5.5	3.9	3.4	1.1	.64	.05	.00	.64
CFSM	1.38	5.33	6.58	3.65	14.3	7.68	2.35	1.21	.40	.41	.09	.80
IN.	1.59	5.96	7.59	4.21	14.95	8.84	2.62	1.39	.45	.48	.11	.89
AC-FT	231	865	1100	611	2170	1280	379	202	65	69	16	129

CAL YR 1978 TOTAL 3860.45 MEAN 10.6 MAX 70 MIN .00 CFSM 3.90 IN 52.78 AC-FT 7660
WTR YR 1979 TOTAL 3589.54 MEAN 9.83 MAX 124 MIN .00 CFSM 3.61 IN 49.07 AC-FT 7120

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA

LOCATION.--Lat 47°00'42", long 123°39'15", in SE¼SE¼ sec.27, T.18 N., R.8 W., Grays Harbor County, Hydrologic Unit 17100104, on left bank 2,000 ft (610 m) upstream from Black Creek, 3.5 mi (5.6 km) northwest of Montesano, and at mile 5.9 (9.5 km).

DRAINAGE AREA.--155 mi^2 (401 km^2).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12 m), from topographic map.

REMARKS.--Water-discharge records excellent. City of Aberdeen diverted about 118 ft^3/s (3.34 m^3/s) for municipal supply at intake 2.2 mi (3.5 km) upstream. Other small diversions for irrigation and domestic use. Since August 1972, flow regulated by Wynoochee Dam, 45.7 mi (73.5 km) upstream, for flood control, during summer months to augment the natural river flow, and for the water supply for the city of Aberdeen. Some regulation from 1969 to August 1972 due to dam construction.

AVERAGE DISCHARGE.--23 years, 1,292 ft^3/s (36.59 m^3/s) 936,100 acre-ft/yr (1,150 hm^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,500 ft^3/s (722 m^3/s) Jan. 19, 1968; maximum gage height, 20.54 ft (6.261 m) Dec. 10, 1956; minimum discharge, 3.0 ft^3/s (0.085 m^3/s) part or all of each day Aug. 26-30, 1967, gage height, 2.86 ft (0.872 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,900 ft^3/s (252 m^3/s) and maximum (*):

		Discharge		Gage height				Discharge		Gage height	
Date	Time	(ft^3/s)	(m^3/s)	(ft)	(m)	Date	Time	(ft^3/s)	(m^3/s)	(ft)	(m)
Feb. 25	2400	8,930	253	11.22	3.420	Mar. 5	0330	*10,300	292	*12.11	3.691

Minimum discharge, 160 ft^3/s (4.53 m^3/s) Aug. 13, 14, gage height, 2.89 ft (0.881 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	906	325	1310	600	498	2930	415	405	281	335	169	172
2	843	348	1180	565	480	1990	400	395	273	281	169	210
3	796	493	1240	546	490	1760	385	385	269	253	169	285
4	758	1440	1480	527	512	3860	390	430	265	238	169	365
5	722	1010	1250	505	1070	8070	380	616	303	231	166	445
6	774	757	941	488	2450	7470	370	772	281	224	166	360
7	714	899	809	472	4520	5670	350	957	265	220	166	285
8	691	1680	733	459	3000	4640	375	808	257	231	166	321
9	677	1490	752	452	3630	4470	435	718	253	231	163	575
10	683	1070	807	644	3760	2070	445	634	245	273	163	460
11	632	939	1690	615	3480	1860	510	575	241	370	163	355
12	552	874	2090	554	4720	1750	599	530	241	335	163	298
13	526	820	1610	546	5850	1770	1600	500	241	289	163	330
14	619	573	1670	545	4190	1500	1420	475	245	269	166	345
15	628	504	1780	547	2640	1150	1040	445	249	245	172	335
16	620	1230	1470	524	2180	1010	856	425	265	231	169	316
17	573	1570	1440	516	2340	1010	778	405	265	220	169	312
18	530	1310	1390	498	3680	964	724	390	245	210	178	303
19	489	1520	1250	558	2790	936	718	380	238	206	224	298
20	467	1300	1170	781	2230	670	670	370	234	203	206	298
21	441	1130	926	1410	2170	604	622	350	231	199	196	294
22	413	995	978	1140	1930	570	575	335	227	196	203	289
23	395	775	1100	930	1790	540	545	330	224	196	175	285
24	446	686	1210	822	1810	525	530	330	220	217	172	281
25	424	640	1100	729	6250	505	505	316	217	234	169	289
26	403	591	965	666	6510	505	485	312	213	224	166	298
27	389	567	1100	638	5660	490	465	321	210	189	166	303
28	388	669	1050	594	4570	470	445	321	210	185	166	312
29	449	657	985	561	---	470	430	303	210	182	163	294
30	432	852	760	536	---	460	415	294	227	178	163	294
31	370	---	639	514	---	435	---	285	---	175	163	---
TOTAL	17750	27714	36875	19482	85200	61124	17877	14112	7345	7270	5341	9607
MEAN	573	924	1190	628	3043	1972	596	455	245	235	172	320
MAX	906	1680	2090	1410	6510	8070	1600	957	303	370	224	575
MIN	370	325	639	452	480	435	350	285	210	175	163	172
AC-FT	35210	54970	73140	38640	169000	121200	35460	27990	14570	14420	10590	19060

CAL YR 1978 TOTAL 323274 MEAN 886 MAX 3870 MIN 185 AC-FT 641200
WTR YR 1979 TOTAL 309697 MEAN 848 MAX 8070 MIN 163 AC-FT 614300

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962-65, 1970 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1969 to current year.

INSTRUMENTATION.--Temperature recorder since October 1969.

REMARKS.--Missing record Oct. 27 to Jan. 11 due to removal of instruments. Other interruptions due to instrument malfunction. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.0°C Aug. 10, 1971; minimum, 1.0°C Jan. 9, 10, 1973, Jan. 7-9, 1974.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 22.5°C July 16, 17, minimum recorded, 3.5°C Jan. 18.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.5	11.5	12.5							---	---	---
2	13.5	11.5	12.5							---	---	---
3	13.0	11.5	12.0							---	---	---
4	13.0	11.0	12.0							---	---	---
5	13.5	11.0	12.0							---	---	---
6	12.5	11.0	12.0							---	---	---
7	13.5	12.0	12.5							---	---	---
8	14.0	12.5	13.0							---	---	---
9	13.5	12.0	13.0							---	---	---
10	12.5	11.5	12.0							---	---	---
11	12.5	11.0	11.5							---	---	---
12	12.5	10.5	11.5							5.5	5.0	5.0
13	12.5	10.0	11.0							5.0	4.5	5.0
14	12.5	10.5	11.5							4.5	4.0	4.5
15	11.5	11.0	11.5							5.0	4.5	4.5
16	13.0	11.5	12.0							5.0	4.5	5.0
17	14.0	12.0	13.0							5.5	4.5	5.0
18	13.5	11.5	12.5							4.5	3.5	4.0
19	12.0	11.5	12.0							5.0	4.0	4.5
20	13.0	11.5	12.0							6.0	5.0	6.0
21	11.5	9.5	10.5							6.0	5.5	5.5
22	11.0	9.5	10.0							5.5	5.5	5.5
23	11.5	10.0	10.5							5.5	5.5	5.5
24	12.0	10.0	11.0							5.5	5.5	5.5
25	10.5	9.0	10.0							5.5	5.5	5.5
26	10.0	8.5	9.5							5.5	5.5	5.5
27	---	---	---							5.5	5.5	5.5
28	---	---	---							5.5	5.5	5.5
29	---	---	---							5.5	5.5	5.5
30	---	---	---							5.5	5.5	5.5
31	---	---	---							5.5	5.5	5.5
MONTH	14.0	8.5	11.5							6.0	3.5	5.0

12037400 WYNOOCHEE RIVER ABOVE BLACK CREEK, NEAR MONTESANO, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	5.5	5.5	7.0	6.0	6.5	9.5	8.0	8.5	12.0	11.0	11.5
2	5.5	5.5	5.5	7.5	6.5	7.0	11.0	8.0	9.0	12.5	10.0	11.0
3	5.5	5.5	5.5	8.0	7.0	7.5	10.0	8.5	9.0	13.0	10.5	12.0
4	5.5	5.5	5.5	9.0	8.0	8.5	10.5	9.0	9.5	12.5	11.0	12.0
5	5.5	5.5	5.5	9.0	8.0	8.5	12.0	9.5	10.5	13.0	11.0	12.0
6	5.5	5.5	5.5	8.5	8.0	8.0	12.0	9.5	10.5	12.5	10.5	11.5
7	5.5	5.5	5.5	8.0	6.5	7.5	11.0	8.0	9.5	11.0	9.5	10.5
8	5.5	5.5	5.5	7.5	5.0	6.5	10.0	8.5	9.0	12.0	10.0	11.0
9	5.5	5.5	5.5	7.5	5.5	6.5	10.0	8.0	9.0	13.5	10.5	11.5
10	5.5	5.5	5.5	8.0	6.0	7.0	8.5	7.5	8.0	11.5	10.5	11.0
11	5.5	5.5	5.5	8.0	7.5	7.5	10.0	7.5	8.5	13.0	9.5	11.0
12	5.5	5.5	5.5	8.5	7.0	7.5	9.0	8.0	8.5	13.0	10.0	11.5
13	5.5	5.5	5.5	8.0	6.0	7.0	9.0	8.0	8.5	15.5	11.5	13.5
14	5.5	5.5	5.5	8.0	7.5	8.0	9.0	7.5	8.0	16.0	12.5	14.5
15	---	---	---	9.0	7.5	8.5	9.0	8.0	8.5	16.0	12.5	14.0
16	---	---	---	8.5	7.0	7.5	8.5	7.5	8.0	16.0	13.0	14.5
17	7.0	5.0	6.0	8.0	7.0	7.5	9.5	7.0	8.5	15.5	12.0	14.0
18	8.0	7.0	7.5	8.5	7.0	7.5	9.5	8.0	8.5	17.0	13.0	14.5
19	7.5	6.5	7.0	9.0	6.5	7.5	9.5	7.5	8.5	16.5	12.0	14.5
20	7.0	6.0	6.5	9.5	6.5	8.0	11.0	8.5	9.5	17.0	12.5	15.0
21	7.0	6.5	6.5	10.5	8.0	9.0	12.5	8.5	10.5	17.5	13.0	15.5
22	7.0	6.0	6.5	10.0	7.5	8.5	12.0	9.0	11.0	15.5	14.0	14.5
23	7.0	6.5	6.5	10.5	7.0	9.0	13.0	9.5	11.5	14.5	13.0	14.0
24	7.0	6.0	6.5	10.5	7.5	9.0	13.5	10.0	11.5	17.0	13.5	15.0
25	7.0	6.5	7.0	9.0	8.0	8.5	14.5	10.5	12.5	18.5	13.5	16.0
26	8.0	7.0	7.5	9.5	7.5	8.5	14.5	10.0	12.5	16.5	14.5	15.5
27	6.5	5.5	6.0	9.5	8.0	8.5	14.0	11.0	12.5	15.5	13.0	14.0
28	7.0	6.0	6.0	9.5	7.5	8.5	12.5	11.5	12.0	15.5	12.0	13.5
29	---	---	---	9.5	7.5	8.5	14.0	10.5	12.0	15.0	12.0	14.0
30	---	---	---	9.5	8.0	8.5	12.0	11.5	12.0	17.0	12.0	14.5
31	---	---	---	9.5	7.5	8.5	---	---	---	18.5	13.5	16.0
MONTH	8.0	5.0	6.0	10.5	5.0	8.0	14.5	7.0	10.0	18.5	9.5	13.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	19.5	14.5	17.0	16.0	14.0	15.0	20.5	17.5	19.0	17.5	16.0	17.0
2	20.5	15.5	18.0	16.0	14.0	15.0	18.0	16.0	17.0	17.0	15.5	16.5
3	19.5	16.0	17.5	17.5	13.5	15.5	18.5	15.5	17.0	17.5	15.5	16.0
4	18.0	16.0	17.0	17.0	15.0	16.0	20.0	16.0	18.0	16.5	15.0	15.5
5	17.5	15.0	16.5	18.5	15.0	16.5	19.5	15.5	17.5	17.0	15.0	16.0
6	16.5	14.0	15.0	19.5	15.5	17.5	19.5	15.5	17.5	16.5	15.0	16.0
7	18.0	13.0	15.5	17.5	15.5	16.5	19.5	16.0	17.5	17.5	14.5	16.0
8	18.5	14.0	16.5	18.5	16.0	17.0	19.0	15.5	17.5	16.5	15.5	16.0
9	19.0	15.0	17.0	19.0	16.5	17.5	20.0	16.5	18.0	16.5	14.5	15.5
10	19.5	15.0	17.5	17.0	16.0	16.5	19.0	16.5	17.5	16.5	14.0	15.0
11	18.0	14.5	16.5	16.5	15.0	16.0	20.0	16.0	18.0	17.0	13.5	15.5
12	18.0	13.5	16.0	18.0	15.0	16.5	19.5	16.5	17.5	17.0	13.5	15.5
13	17.0	14.0	15.5	17.0	15.0	16.0	17.5	16.5	17.0	17.5	14.0	16.0
14	15.5	13.5	14.5	20.0	14.5	17.0	17.0	16.0	16.5	18.0	14.5	16.0
15	16.0	12.5	14.5	21.5	16.0	18.5	18.5	16.0	16.5	17.5	15.5	16.5
16	16.0	12.5	14.5	22.5	17.5	20.0	19.0	16.0	17.5	17.0	15.0	16.0
17	15.5	13.5	14.5	22.5	18.0	20.5	18.5	16.5	17.5	17.5	14.5	16.0
18	15.5	14.0	14.5	22.0	18.5	20.0	16.5	16.0	16.5	17.5	14.0	16.0
19	16.0	12.0	15.0	22.0	18.5	20.0	18.0	15.5	16.5	16.5	15.5	16.0
20	16.0	14.0	14.5	22.0	18.5	20.0	19.5	16.0	17.5	15.5	15.0	15.5
21	17.0	13.0	15.0	20.5	17.0	18.5	18.0	16.5	17.0	16.5	14.0	15.0
22	16.0	13.0	14.5	19.0	16.5	17.5	18.5	16.0	17.0	16.5	14.0	15.0
23	18.5	13.5	16.0	17.5	16.0	17.0	17.5	16.0	16.5	17.0	14.0	15.5
24	20.0	14.5	17.5	17.5	16.0	16.5	19.0	15.5	17.0	17.0	13.5	15.0
25	20.5	15.5	18.5	18.0	16.0	16.5	20.0	16.0	18.0	15.5	14.0	14.5
26	20.0	16.0	18.0	18.5	16.0	17.0	18.0	17.0	17.0	15.5	14.0	15.0
27	19.5	16.0	17.5	19.5	16.5	17.5	17.5	16.0	17.0	15.5	14.0	14.5
28	17.0	15.0	15.5	18.0	16.0	16.5	17.5	16.0	16.5	15.5	13.0	14.0
29	15.5	14.0	15.0	19.5	15.0	17.5	17.0	16.0	16.5	14.5	12.5	13.5
30	16.5	14.5	15.5	22.0	17.5	20.0	17.5	15.5	16.5	15.5	13.0	14.5
31	---	---	---	22.0	18.0	20.0	17.5	15.5	16.5	---	---	---
MONTH	20.5	12.0	16.0	22.5	13.5	17.5	20.5	15.5	17.0	18.0	12.5	15.5
YEAR	22.5	3.5	12.5									

12039000 HUMPTULIPS RIVER NEAR HUMPTULIPS, WA

LOCATION.--Lat 47°13'42", long 123°56'23", in NE¼NE¼ sec.17, T.20 N., R.10 W., Grays Harbor County, Hydrologic Unit 17100105, on right bank 1.0 mi (1.6 km) southeast of Humptulips, 2.3 mi (3.7 km) upstream from Stevens Creek, 3.3 mi (5.3 km) downstream from confluence of East and West Forks, and at mile 24.8 (39.9 km).

DRAINAGE AREA.--130 mi² (337 km²).

PERIOD OF RECORD.-- May 1933 to January 1935, July 1942 to September 1979 (discontinued). Water temperatures November 1969 to October 1970.

REVISED RECORDS.--WSP 1216: 1934-35, 1943-46, 1947(M), 1949(M). WSP 1246: Drainage area. WSP 1396: 1946(M), 1954(P). WSP 1932: 1960(P).

GAGE.--Water-stage recorder. Altitude of gage is 120 ft (37 m), from topographic map. Prior to Jan. 14, 1935, and Mar. 1, 1950, to Jan. 16, 1953, water-stage recorder and July 1, 1942, to Feb. 28, 1950, and Jan. 17, 1953, to Sept. 30, 1959, nonrecording gage; all at sites 400 ft (122 m) downstream at different datums.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--38 years (water years 1934, 1943-79), 1,337 ft³/s (37.86 m³/s), 139.67 in/yr (3,548 mm/yr), 968,700 acre-ft/yr (1,190 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,000 ft³/s (935 m³/s) Jan. 22, 1935, gage height, 12.7 ft (3.87 m), datum then in use, from flood marks, from rating curve extended above 16,500 ft³/s (467 m³/s); maximum gage height, 13.03 ft (3.972 m) Jan. 19, 1968; minimum discharge observed, 82 ft³/s (2.32 m³/s) Sept. 11, 1944.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 10,000 ft³/s (283 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 25	2000	12,800	362	8.95	2.728	Mar. 4	2400	*17,600	498	*10.40	3.170

Minimum discharge, 145 ft³/s (4.11 m³/s) Aug. 31, Sept. 1, gage height, 0.80 ft (0.244 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	797	335	1470	712	486	2290	506	560	329	455	189	162
2	727	377	1120	649	463	1020	500	530	325	305	186	343
3	671	627	1520	615	477	1650	488	506	325	297	186	1110
4	626	2760	1750	582	497	7100	554	671	317	261	180	1220
5	584	1220	1300	548	1910	10300	548	1200	425	230	177	1220
6	550	886	1080	518	4420	6700	518	1930	361	224	172	839
7	518	904	934	491	4790	4900	494	1750	317	217	170	614
8	493	2110	841	471	2920	3170	560	1430	297	329	170	938
9	478	1210	881	461	4780	2340	632	1150	285	305	167	1620
10	502	958	1070	776	3000	1070	644	976	277	632	165	1070
11	659	817	2860	601	2630	1630	678	867	269	946	162	783
12	520	723	1880	626	4450	1440	902	783	265	818	160	632
13	475	663	1360	613	5820	1250	3250	727	273	687	157	536
14	448	588	1970	590	3500	1150	2190	678	261	482	165	465
15	425	573	1700	570	2360	1260	1500	644	261	410	165	420
16	411	1420	1470	531	1900	1150	1180	614	293	361	162	388
17	393	1590	1500	518	3180	1020	1040	578	301	329	157	352
18	376	1260	1380	482	4530	938	1110	542	269	305	172	329
19	363	1690	1160	609	3030	888	1010	517	253	289	227	313
20	388	1160	1170	1380	2260	811	938	496	245	273	189	297
21	352	987	1050	1870	1610	776	868	476	234	261	175	285
22	334	866	1600	1230	1510	734	804	460	227	249	198	273
23	331	777	1450	1080	1330	699	762	455	220	239	175	261
24	603	719	2380	878	2150	678	727	454	213	231	167	249
25	348	668	1730	770	9550	657	685	410	210	227	160	241
26	329	614	1360	709	7080	664	658	420	204	220	155	234
27	317	603	1150	676	4290	688	632	420	201	213	153	230
28	322	625	1080	620	3090	572	626	425	201	207	151	205
29	416	724	882	577	---	568	602	388	201	201	151	245
30	390	1220	815	540	---	572	578	356	241	198	149	253
31	353	---	767	509	---	936	---	343	---	192	149	---
TOTAL	14289	29636	42590	21792	88193	60701	26160	21844	8100	10675	5261	16207
MEAN	461	988	1374	703	3150	1961	872	705	270	344	170	540
MAX	797	2760	2860	1870	9550	10300	3250	1930	425	946	227	1620
MIN	317	335	767	461	463	568	488	343	201	192	149	162
CFSM	3.55	7.60	10.6	5.41	24.2	15.1	6.71	5.42	2.08	2.65	1.31	4.15
IN.	4.09	8.48	12.19	6.24	25.24	17.40	7.49	6.25	2.32	3.05	1.51	4.64
AC-FT	28340	58780	84480	43220	174900	120400	51900	43330	16070	21170	10440	32150

CAL YR 1978 TOTAL 347962 MEAN 953 MAX 9450 MIN 157 CFSM 7.33 IN 99.57 AC-FT 690200
WTR YR 1979 TOTAL 345566 MEAN 947 MAX 10300 MIN 149 CFSM 7.29 IN 98.88 AC-FT 685400

12039005 HUMPTULIPS RIVER AT HUMPTULIPS, WA

LOCATION.--Lat 47°13'48", long 123°57'38", in SE¼SE¼ sec.7, T.20 N., R.10 W., Grays Harbor County, Hydrologic Unit 17100105, at U.S. Highway 101 bridge at Humptulips, 1.2 mi (1.9 km) downstream from gaging station (12039000) and at mile 23.6 (38.0 km).

DRAINAGE AREA.--132 mi² (342 km²).

PERIOD OF RECORD.--Water years 1959-74, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from upstream gaging station; discharge values are good. Prior to October 1970 published as Humptulips River near Humptulips (12039000).

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
NOV , 1978							
16...	1115	1520	43	7.0	5.5	10	2.0
JAN , 1979							
16...	1100	530	52	7.4	4.6	0	.80
MAR							
19...	1100	860	47	7.2	7.0	5	1.0
MAY							
14...	1230	605	40	7.5	13.2	5	.80
JUL							
17...	1130	330	50	7.3	17.8	5	.80
SEP							
10...	1130	1050	51	7.3	12.3	10	2.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
NOV , 1978							
16...	12.2	44	.51	.01	.020	.01	.03
JAN , 1979							
16...	12.4	<2	.09	.00	.020	.00	.00
MAR							
19...	12.0	1	.15	.00	.010	.02	.06
MAY							
14...	11.2	2	.08	.00	.010	.00	.00
JUL							
17...	9.8	5	.02	.01	.020	.01	.03
SEP							
10...	10.6	56	.16	.01	.010	.05	.15

12039220 MOCLIPS RIVER AT MOCLIPS, WA

LOCATION.--Lat 47°14'32", long 124°11'27", in NW¼NW¼ sec.9, T.20 N., R.12 W., Grays Harbor County, Hydrologic Unit 17100102, on right bank at old road crossing, 1.0 mi (1.6 km) northeast of Moclips and 1.4 mi (2.3 km) upstream from mouth.

DRAINAGE AREA.--35.0 mi² (90.6 km²).

PERIOD OF RECORD.--December 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 25 ft (7.6 m), from topographic map.

REMARKS.--Records good except those above 1,000 ft³/s (28.3 m³/s) and those for period of no gage-height record Feb. 21 to Apr. 9, which are fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,260 ft³/s (121 m³/s) Dec. 26, 1975, gage height, 12.40 ft (3,780 m) from rating curve extended above 1,800 ft³/s (51.0 m³/s) on basis of velocity-area study; minimum discharge, 4.1 ft³/s (0.12 m³/s) all or part of each day Aug. 8-14, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 6	2100	*2,300	67.4	*8.84	2.694

Minimum discharge, 4.1 ft³/s (0.12 m³/s) all or part of each day Aug. 8-14, gage height, 1.81 ft (0.552 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	146	55	500	56	62	300	60	41	21	85	9.3	9.3
2	106	55	256	55	56	220	85	39	20	110	7.7	20
3	82	116	620	54	60	190	80	37	18	56	7.7	124
4	68	565	736	52	99	900	100	90	17	35	6.9	232
5	59	253	277	48	580	1500	130	430	47	25	6.1	213
6	52	132	157	43	1360	800	100	403	59	19	5.3	130
7	51	157	118	43	1320	500	70	352	41	16	4.5	79
8	47	541	101	42	523	300	110	247	30	32	4.5	108
9	66	232	118	43	598	200	200	160	24	54	4.1	105
10	60	120	267	102	433	160	100	106	19	55	4.1	135
11	124	94	662	200	376	130	235	84	17	80	4.1	76
12	90	80	316	130	1060	110	343	71	15	94	4.1	52
13	63	69	177	100	1140	100	641	66	15	66	4.1	42
14	54	62	248	95	436	90	403	59	16	47	5.3	35
15	46	60	248	101	228	130	242	54	16	35	6.1	30
16	43	750	190	85	248	110	157	50	19	20	5.3	26
17	43	460	217	76	770	90	124	44	25	24	4.5	23
18	39	253	200	66	838	80	165	41	30	20	8.5	20
19	36	586	146	230	433	70	192	37	25	19	13	19
20	43	307	128	460	265	64	150	34	19	18	12	18
21	55	105	135	457	210	60	112	31	16	17	13	17
22	46	116	160	227	160	56	88	29	14	16	15	16
23	39	97	220	146	170	52	76	29	14	16	13	15
24	71	80	373	128	350	50	65	28	13	15	12	14
25	63	87	217	106	1300	48	59	26	13	15	10	13
26	46	79	143	92	900	46	52	26	12	14	9.3	13
27	41	79	112	116	1000	44	51	28	12	14	8.5	17
28	43	107	94	132	500	43	47	37	12	13	7.7	34
29	101	162	76	103	---	45	46	39	12	13	6.9	36
30	112	361	68	82	---	50	42	31	15	12	6.1	35
31	74	---	58	69	---	54	---	26	---	10	6.1	---
TOTAL	1989	6402	7310	3765	15495	6592	4401	2775	626	1073	234.6	1786.3
MEAN	64.2	213	236	121	553	213	147	89.5	20.9	34.6	7.57	59.5
MAX	146	750	736	457	1360	1500	641	430	59	110	15	232
MIN	36	55	58	42	56	43	42	26	12	10	4.1	9.3
CFSM	1.83	6.09	6.74	3.46	15.8	6.09	4.20	2.56	.60	.99	.22	1.70
IN.	2.11	6.80	7.77	3.98	16.47	7.01	4.68	2.95	.67	1.14	.25	1.90
AC-FT	3950	12700	14500	7470	30730	13080	8730	5500	1240	2130	466	3540

CAL YR 1978 TOTAL 50366.4 MEAN 138 MAX 1200 MIN 8.6 CFSM 3.94 IN 53.52 AC-FT 99890
WTR YR 1979 TOTAL 52420.1 MEAN 144 MAX 1500 MIN 4.1 CFSM 4.11 IN 55.72 AC-FT 104000

12039300 NORTH FORK QUINAULT RIVER NEAR AMANADA PARK, WA
(Hydrologic bench-mark station)

LOCATION.--Lat 47°35'46", long 123°37'23", in SW¼ sec.6, T.24 N., R.7 W., Jefferson County, Hydrologic Unit 17100102, Olympic National Park, on right bank 15.5 mi (24.9 km) northeast of Amanda Park and at mile 5.2 (8.4 km).

DRAINAGE AREA.--74.1 mi² (191.9 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--November 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 620 ft (189 m), from topographic map.

REMARKS.--Water-discharge records good except those above 2,500 ft³/s (70.1 m³/s), which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--14 years, 861 ft³/s (24.38 m³/s) 157.79 in/yr (4,008 mm/yr), 623,800 acre-ft/yr (769 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,800 ft³/s (759 m³/s) Nov. 1, 1977, gage height, 13.76 ft (4.194 m), from rating curve extended above 4,200 ft³/s (119 m); minimum, 103 ft³/s (2.92 m³/s) Oct. 3, 1965, gage height, 1.93 ft (0.588 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*) from rating curve extended above 1,200 ft³/s (34.0 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 3	2200	*19,700	558	*12.27	3.740	Mar. 4	1800	7,680	217	8.75	2.667

Minimum discharge, 122 ft³/s (3.46 m³/s) Aug. 31, gage height, 3.84 ft (1.170 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	414	215	421	230	175	463	346	900	1050	755	269	298
2	382	388	364	225	170	400	340	820	1290	533	252	850
3	364	3020	665	220	170	388	328	890	1230	470	241	1450
4	340	1750	564	215	185	3490	370	1350	1040	491	225	1040
5	322	564	414	205	382	3420	428	2130	1180	491	220	1030
6	304	498	358	195	720	2950	470	1580	900	484	205	484
7	298	1390	322	190	620	2150	442	1040	746	491	200	548
8	292	1000	310	185	870	1210	435	840	791	1350	200	2100
9	310	564	322	195	1460	910	421	773	890	683	195	1530
10	364	449	533	352	720	840	388	719	970	2140	195	674
11	352	394	1080	292	665	840	358	683	920	1220	185	498
12	286	364	533	252	1290	764	612	728	791	860	185	421
13	263	320	435	230	2420	701	1030	870	710	647	180	376
14	252	310	620	215	960	728	629	1000	620	580	185	340
15	241	322	477	205	647	920	491	1020	596	572	175	322
16	236	960	435	195	533	737	435	970	647	580	170	298
17	230	647	449	190	674	620	400	870	612	580	166	280
18	220	470	388	180	746	556	400	880	629	564	180	269
19	215	407	346	200	533	519	376	900	630	533	180	258
20	225	364	328	990	449	512	358	1000	590	505	157	247
21	210	340	316	647	394	526	364	1090	568	442	185	236
22	200	316	449	400	358	526	394	1180	540	400	180	220
23	252	304	449	334	334	556	449	1170	556	382	157	210
24	304	298	737	298	470	588	484	1110	630	364	152	200
25	215	292	449	263	1960	548	526	1100	720	358	144	195
26	200	269	382	252	1150	491	620	1260	755	346	144	195
27	190	382	346	236	755	449	791	960	692	334	144	230
28	220	456	298	215	560	421	850	746	674	310	139	236
29	292	364	269	200	---	400	840	665	596	288	139	200
30	241	548	250	190	---	382	880	665	820	288	130	190
31	215	---	240	180	---	364	---	800	---	288	126	---
TOTAL	8449	17965	13549	8376	20370	28369	15255	30709	23383	18313	5605	15425
MEAN	273	599	437	270	728	915	509	991	780	591	181	514
MAX	414	3020	1080	990	2420	3490	1030	2130	1290	2140	269	2100
MIN	190	215	240	180	170	364	320	665	540	288	126	190
CFSM	3.68	8.07	5.90	3.64	9.83	12.3	6.87	13.4	10.5	7.98	2.44	6.94
IN.	4.24	9.01	6.80	4.20	10.23	14.24	7.66	15.42	11.74	9.19	2.81	7.74
AC-FT	16760	35630	26870	16610	40400	56270	30260	60910	46380	36320	11120	30600

CAL YR 1978 TOTAL 231891 MEAN 635 MAX 4420 MIN 190 CFSM 8.57 IN 116.41 AC-FT 460000
WTR YR 1979 TOTAL 205750 MEAN 564 MAX 3490 MIN 126 CFSM 7.61 IN 103.24 AC-FT 408100

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1965 to September 1979 (discontinued).

INSTRUMENTATION.--Temperature recorder since March 1965.

REMARKS.--Interruptions in the record were due to instrument malfunction. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 14.5°C Aug. 7, 16-18, 1965, Aug. 25, 1979; minimum, 0.5°C Dec. 29-31, 1978, Jan. 1, 31, 1979.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 14.5°C Aug. 25; minimum recorded, 0.5°C Dec. 29-Jan. 1, 31.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978 24...	1100	200	87	7.6	7.2	11.6	62	2	2	40
NOV 28...	1145	420	71	7.1	4.0	12.6	6	3	<1	35
DEC 13...	1430	420	81	7.7	3.6	13.7	--	2	<1	38
JAN , 1979 23...	1100	334	89	7.3	3.0	13.5	2	<1	5	40
FEB 14...	1500	860	62	7.2	3.0	12.7	--	<1	<1	29
MAR 20...	1130	505	87	7.1	3.9	12.6	<1	<1	<1	38
APR 17...	1030	394	90	7.6	4.6	12.2	7	<1	<1	41
MAY 22...	1100	1040	53	7.3	5.8	12.3	16	1	1	26
JUN 19...	1000	612	64	7.2	7.0	12.4	21	<1	<1	21
JUL 24...	1130	352	83	7.4	10.6	10.5	1	2	14	35
AUG 21...	1000	157	98	7.0	11.2	10.6	110	6	54	46
SEP 19...	0945	250	93	7.6	10.7	10.8	<1	2	21	43

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT , 1978 24...	10	15	.7	1.6	8	.1	.1	30	9.3	1.2
NOV 28...	8	13	.6	1.4	8	.1	.2	27	11	1.0
DEC 13...	10	14	.8	1.5	8	.1	.3	28	11	.9
JAN , 1979 23...	13	15	.7	1.7	8	.1	.1	27	12	1.0
FEB 14...	10	11	.6	1.3	9	.1	.1	23	8.1	1.0
MAR 20...	10	14	.7	1.5	8	.1	.1	28	11	.9
APR 17...	17	15	.8	1.7	8	.1	.1	24	14	1.6
MAY 22...	8	9.4	.5	1.0	9	.1	.3	18	8.6	.9
JUN 19...	4	7.7	.5	1.1	11	.1	.1	17	7.7	.8
JUL 24...	10	13	.7	1.5	8	.1	.2	25	15	1.0
AUG 21...	16	17	.8	1.8	9	.1	.2	30	16	.8
SEP 19...	9	16	.8	1.7	9	.1	.1	34	16	1.0

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

WATER QUALITY DATA

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)
OCT , 1978 24...	.1	4.7	54	51	.07	40.8	.01	.000	1	.76
NOV 28...	.0	4.3	47	48	.06	54.3	.03	.010	8	9.2
DEC 13...	.0	5.0	61	50	.08	70.5	.40	.000	5	5.8
JAN , 1979 23...	.1	4.8	52	52	.07	46.9	.05	.010	2	1.8
FEB 14...	.0	4.9	41	38	.06	95.2	.06	.040	8	19
MAR 20...	.0	5.4	50	50	.07	68.2	.02	.000	2	2.7
APR 17...	.1	5.4	47	53	.06	50.0	.02	.000	3	3.2
MAY 22...	.1	3.4	35	35	.05	98.3	.03	.010	4	11
JUN 19...	.0	3.0	42	31	.06	69.4	.01	.000	1	1.7
JUL 24...	.1	4.7	45	51	.06	42.8	.02	.030	4	3.8
AUG 21...	.1	.9	68	56	.09	28.8	.03	.000	1	.42
SEP 19...	.0	5.5	64	60	.09	44.6	.06	.010	2	1.4

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)
FEB , 1979 14...	1500	0	0	1	0	3	400
AUG 21...	1000	1	0	0	0	5	70

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	CYANIDE TOTAL (MG/L AS CN)
FEB , 1979 14...	5	10	.0	0	1	10	.00
AUG 21...	4	0	.0	0	0	10	.00

DATE	TIME	GROSS ALPHA, DISSOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS ALPHA, DISSOLVED (PCI/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT)	GROSS BETA, DISSOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DISSOLVED (PCI/L AS SR/YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L)	URANIUM DISSOLVED, EXTRACTION (UG/L)
AUG , 1979 21...	1000	<1.2	<.4	<.8	<.3	.6	<.4	.6	<.4	.04	.06

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

WATER QUALITY DATA

DATE	TIME	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	CHLORDANE, TOTAL (UG/L)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDE, TOTAL (UG/L)
FEB , 1979										
14...	1500	.0	0	.00	.0	.0	0	.00	.0	.00

DATE	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	DI-ELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ETHION, TOTAL (UG/L)
FEB , 1979										
14...	.0	.00	.0	.00	.00	.0	.00	.00	.0	.00

DATE	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG)	MALA-THION, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
FEB , 1979									
14...	.00	.0	.00	.0	.00	.0	.00	.00	.00

DATE	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOXA-PHENE, TOTAL IN BOTTOM MATERIAL (UG/KG)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
FEB , 1979									
14...	.00	.00	.00	0	0	.00	.00	.00	.00

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1				6.0	5.0	5.5	4.5	4.0	4.0	1.5	.5	1.0
2				5.5	5.0	5.5	4.5	4.0	4.5	2.0	1.5	1.5
3				7.5	5.5	6.0	4.5	4.5	4.5	2.5	1.5	2.0
4				7.0	5.0	5.5	4.5	4.0	4.5	2.5	1.5	2.0
5				5.5	4.5	5.0	4.0	3.0	3.5	1.5	1.0	1.5
6				5.5	5.5	5.5	3.0	2.5	3.0	2.0	1.5	1.5
7				7.0	5.5	6.5	2.5	2.5	2.5	2.0	1.0	1.5
8				7.0	5.0	6.0	3.0	2.5	3.0	2.5	1.5	2.0
9				5.0	4.0	4.5	3.0	2.5	3.0	3.0	2.5	3.0
10				4.0	3.0	3.5	3.5	3.0	3.0	3.0	2.5	3.0
11				3.0	2.5	3.0	3.5	3.0	3.5	3.0	2.5	3.0
12				3.0	2.5	2.5	3.5	3.0	3.0	3.5	3.0	3.0
13				3.0	2.5	2.5	3.0	3.0	3.0	3.0	2.5	2.5
14				3.0	2.0	2.5	3.5	3.0	3.0	3.5	2.5	3.0
15				3.0	2.5	2.5	3.5	2.5	3.0	3.5	3.0	3.0
16				3.5	3.0	3.0	3.5	2.5	3.0	3.5	3.0	3.0
17				4.5	3.5	4.0	3.0	2.5	3.0	3.5	3.0	3.0
18				4.5	4.0	4.5	3.0	2.5	3.0	3.0	2.5	3.0
19				4.0	3.0	3.5	3.0	2.5	2.5	3.5	3.0	3.0
20				3.5	3.0	3.0	3.5	3.0	3.0	3.5	2.5	3.0
21				3.0	2.5	3.0	3.5	3.0	3.5	3.5	3.0	3.0
22				3.0	2.5	3.0	3.5	3.5	3.5	3.0	2.5	3.0
23				4.0	3.0	3.5	4.0	3.5	3.5	3.5	3.0	3.0
24				4.5	4.0	4.0	3.5	3.0	3.0	3.0	2.5	2.5
25				4.5	3.5	4.0	3.0	2.5	2.5	2.5	2.0	2.5
26				4.0	3.5	4.0	2.5	2.5	2.5	2.5	1.5	2.0
27				4.0	3.5	3.5	3.0	2.0	2.5	2.5	2.0	2.0
28				4.5	4.0	4.0	2.0	1.0	1.5	2.0	1.5	2.0
29				4.5	4.5	4.5	1.0	.5	.5	2.0	1.0	1.5
30				4.5	4.0	4.5	1.0	.5	.5	2.0	1.0	1.0
31				---	---	---	.5	.5	.5	1.5	.5	1.0
MONTH				7.5	2.0	4.0	4.5	.5	3.0	3.5	.5	2.5

12039300 NORTH FORK QUINAULT RIVER NEAR AMANDA PARK, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.5	1.0	1.5	3.5	3.0	3.0	4.5	3.5	4.0	6.0	4.5	5.0
2	1.5	1.0	1.0	4.0	3.5	3.5	5.5	4.0	4.5	7.0	4.5	5.5
3	2.0	1.0	1.5	4.0	3.5	4.0	5.0	4.0	4.5	6.5	5.0	5.5
4	2.5	2.0	2.5	3.5	2.0	2.5	5.5	4.5	5.0	5.5	4.5	5.0
5	2.5	2.0	2.5	3.5	2.0	3.0	6.5	4.0	5.0	4.5	4.0	4.5
6	2.5	2.0	2.0	3.5	3.0	3.5	5.5	4.5	5.0	5.0	4.0	4.5
7	3.0	2.5	3.0	4.0	3.0	3.5	5.5	4.0	4.5	6.0	4.5	5.0
8	3.0	2.5	2.5	4.0	3.0	3.5	5.0	4.0	4.5	6.5	4.5	5.5
9	3.5	2.5	3.0	4.5	3.5	3.5	5.0	4.0	4.5	7.0	4.5	5.5
10	3.5	3.5	3.5	4.5	3.5	4.0	4.5	3.5	4.0	6.0	5.0	5.5
11	3.5	3.5	3.5	4.5	3.5	4.0	5.0	3.5	4.0	7.0	5.0	6.0
12	3.5	3.5	3.5	4.5	3.5	4.0	4.0	4.0	4.0	6.5	5.0	5.5
13	3.5	3.0	3.0	5.0	3.5	4.0	4.0	3.5	4.0	8.0	5.0	6.0
14	3.0	2.5	3.0	4.5	3.5	4.0	4.5	3.5	4.0	7.5	5.0	6.0
15	3.0	2.5	3.0	4.5	4.0	4.0	5.0	4.0	4.5	7.5	5.0	6.0
16	3.0	2.5	2.5	4.5	3.5	4.0	4.5	3.5	4.0	7.0	5.0	6.0
17	2.5	2.5	2.5	4.5	3.5	4.0	5.0	4.0	4.5	6.5	5.0	5.5
18	3.5	2.5	3.0	5.0	3.5	4.0	4.5	4.0	4.5	8.0	5.0	6.5
19	3.0	2.5	3.0	5.0	3.5	4.0	5.5	3.5	4.5	8.0	4.5	6.0
20	3.5	3.0	3.0	5.5	3.5	4.0	6.0	4.0	5.0	8.0	5.0	6.5
21	4.0	3.0	3.5	5.5	3.5	4.0	6.5	4.0	5.0	8.5	5.0	6.5
22	4.0	3.0	3.5	5.5	3.5	4.0	7.0	4.5	5.5	7.5	5.5	6.5
23	3.5	3.0	3.5	5.5	3.5	4.5	7.0	4.0	5.5	6.0	5.5	6.0
24	3.0	2.5	2.5	5.0	3.5	4.5	7.0	4.0	5.5	8.0	5.5	6.5
25	3.0	2.5	2.5	4.5	4.0	4.0	7.0	4.0	5.5	8.5	5.5	7.0
26	4.0	3.0	3.5	5.0	4.0	4.0	7.0	4.5	5.5	7.0	5.5	6.0
27	3.5	2.5	3.0	5.5	4.0	4.5	7.0	4.5	5.5	5.5	5.0	5.0
28	4.0	3.0	3.5	5.5	3.5	4.5	5.5	4.5	5.0	7.0	4.5	5.5
29	---	---	---	4.5	4.0	4.0	6.0	4.5	5.5	6.5	4.5	5.5
30	---	---	---	4.5	3.5	4.0	7.0	4.5	5.5	8.5	5.0	6.5
31	---	---	---	4.5	3.5	4.0	---	---	---	9.0	5.5	7.0
MONTH	4.0	1.0	3.0	5.5	2.0	4.0	7.0	3.5	5.0	9.0	4.0	6.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.0	6.0	7.5	7.5	6.5	7.0	---	---	---	12.0	11.0	11.5
2	9.5	6.0	7.5	8.5	6.0	7.0	---	---	---	11.5	10.5	11.0
3	9.0	6.0	7.0	9.5	7.0	8.0	---	---	---	10.5	10.0	10.5
4	7.0	6.0	6.5	9.5	8.0	8.5	---	---	---	10.0	9.5	10.0
5	8.0	6.0	6.5	9.5	8.0	8.5	---	---	---	11.0	9.5	10.0
6	7.0	5.0	6.0	10.5	8.0	9.0	---	---	---	10.5	9.5	10.0
7	8.5	5.0	6.5	9.0	8.0	8.5	---	---	---	11.0	10.0	10.5
8	9.0	6.0	7.5	9.0	8.0	8.5	---	---	---	11.0	9.5	10.5
9	9.5	6.0	7.5	10.5	8.0	9.0	---	---	---	10.5	9.5	9.5
10	9.0	6.5	7.5	9.0	8.0	8.5	---	---	---	10.0	8.5	9.5
11	8.5	6.5	7.5	8.5	7.5	8.0	---	---	---	10.5	8.5	9.5
12	8.5	6.0	7.0	9.0	7.5	8.0	---	---	---	10.5	8.5	9.5
13	8.0	6.0	7.0	9.0	7.5	8.0	---	---	---	11.5	9.0	10.0
14	7.5	6.0	6.5	11.0	7.5	9.0	---	---	---	12.0	9.5	10.5
15	7.0	6.0	7.0	12.0	8.5	10.0	---	---	---	12.5	10.5	11.0
16	7.5	6.0	7.0	12.5	9.5	11.0	---	---	---	12.5	10.5	11.0
17	7.5	6.0	7.0	13.5	10.0	11.5	---	---	---	12.0	9.5	10.5
18	9.0	6.5	7.5	13.5	10.5	12.0	---	---	---	12.0	10.0	11.0
19	8.5	6.5	7.5	14.0	10.5	12.0	---	---	---	12.0	10.5	11.0
20	8.0	6.5	7.0	14.0	11.0	12.5	---	---	---	11.0	11.0	11.0
21	9.0	6.5	7.5	13.5	11.0	12.0	---	---	---	12.0	10.5	11.0
22	8.5	6.5	7.5	13.0	10.0	11.5	13.5	11.0	12.0	12.0	10.5	11.0
23	9.5	6.5	8.0	13.0	10.0	11.5	12.5	11.0	11.5	12.0	9.5	10.5
24	11.0	7.0	8.5	---	---	---	14.0	10.5	12.0	11.5	9.0	10.0
25	11.0	7.5	9.0	---	---	---	14.5	11.0	12.0	12.0	9.5	10.5
26	11.5	7.5	9.0	---	---	---	13.0	11.0	12.0	11.0	10.5	10.5
27	11.0	7.5	9.0	---	---	---	12.0	11.5	12.0	10.5	10.0	10.5
28	11.0	8.0	9.0	---	---	---	12.5	11.0	11.5	10.5	9.0	9.5
29	9.0	8.0	8.0	---	---	---	13.0	11.0	12.0	9.5	9.0	9.0
30	8.5	7.5	8.0	---	---	---	12.0	11.0	11.5	11.0	9.0	9.5
31	---	---	---	---	---	---	12.5	11.0	11.5	---	---	---
MONTH	11.5	5.0	7.5	14.0	6.0	9.5	14.5	10.5	12.0	12.5	8.5	10.5
YEAR	14.5	.5	5.5									

12039500 QUINAULT RIVER AT QUINAULT LAKE, WA

LOCATION.--Lat 47°27'28" long 123°53'17", in SW¼NE¼ sec.25, T.23 N., R.10 W., Grays Harbor County, Hydrologic Unit 17100102, Quinault Indian Reservation, on left bank at outlet of Quinault Lake, 50 ft (15 m) downstream from Olympic Highway bridge on U.S. Highway 101, 2.0 mi (3.2 km) southwest of Quinault, and at mile 33.4 (53.7 km).

DRAINAGE AREA.--264 mi² (684 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1911 to current year. Monthly discharge only for some periods, published in WSP 1316.

REVISED RECORDS.--WSP 442: Drainage area. WSP 1286: 1915-16(M), 1934, 1936-39(M). WSP 1316: 1923, 1925, 1933. WSP 1635: 1917.

GAGE.--Water-stage recorder. Datum of gage is 184.60 ft (56.266 m) National Geodetic Vertical Datum of 1929 (State Highway Department bench mark). Prior to Sept. 30, 1916, nonrecording gages at sites within 4 mi (6.4 km) northeast of present site, at different datum. Oct. 1, 1916, to May 2, 1935, water-stage recorder at site 300 ft (91 m) downstream from present site at datum 0.36 ft (0.110 m) higher than present datum.

REMARKS.--Water-discharge records excellent. Flow affected by natural storage in Quinault Lake. No diversions above station.

AVERAGE DISCHARGE.--68 years, 2,830 ft³/s (80.15 m³/s) 145.57 in/yr (3,697 mm/yr), 2,050,000 acre-ft/yr (2,520 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,200 ft³/s (1,420 m³/s) Nov. 4, 1955, gage height, 20.51 ft (6.251 m); minimum, 276 ft³/s (7.82 m³/s) Sept. 12, 1944, gage height, 1.96 ft (0.597 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1909 reached a stage of approximately 22 ft (6.7 m), present datum, discharge, 52,600 ft³/s (1,490 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s (340 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 6	0200	*13,100	371	*9.45	2.880

Minimum discharge, 426 ft³/s (12.1 m³/s) Aug. 31, Sept. 1, gage height, 2.23 ft (0.680 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1670	764	1890	1320	951	4020	1330	2190	1830	1610	797	451
2	1560	780	1830	1250	900	3200	1280	2210	2010	1630	768	670
3	1460	958	1870	1180	882	2680	1240	2170	2260	1480	735	1650
4	1360	3700	2190	1130	880	4640	1230	2450	2360	1340	706	2780
5	1290	3510	2110	1090	1360	12600	1240	3510	2390	1260	676	3230
6	1220	2780	1920	1020	2210	12400	1250	4880	2360	1200	652	2900
7	1150	2440	1720	987	4060	10600	1280	4920	2140	1150	628	2330
8	1110	3680	1580	946	3850	7790	1320	4190	1940	1420	610	2520
9	1070	3240	1540	914	5620	5670	1370	3500	1840	1740	595	4180
10	1090	2640	1580	1020	5370	4440	1380	3010	1850	2220	578	3920
11	1170	2170	2680	1110	4500	3780	1360	2640	1890	3170	562	3090
12	1140	1870	3020	1120	4760	3390	1390	2400	1870	3130	549	2470
13	1080	1640	2670	1110	8210	3050	2460	2270	1810	2660	539	2040
14	1020	1480	2800	1070	7900	2810	3170	2290	1690	2240	531	1740
15	974	1370	2840	1030	5590	2860	2920	2300	1600	1950	531	1540
16	933	1540	2640	962	4270	2910	2540	2440	1530	1760	527	1380
17	892	2260	2530	910	3900	2710	2230	2400	1490	1650	520	1260
18	862	2240	2410	869	4710	2460	2070	2300	1430	1570	530	1160
19	829	2090	2160	890	4340	2240	1960	2250	1400	1500	561	1090
20	806	1880	1970	1160	3600	2070	1790	2240	1380	1430	557	1020
21	784	1700	1830	2030	3000	1950	1670	2310	1330	1360	552	955
22	756	1560	2000	2070	2540	1870	1570	2420	1290	1270	544	909
23	758	1460	2250	1880	2200	1810	1540	2560	1250	1200	550	860
24	792	1350	2660	1700	2130	1800	1530	2590	1240	1130	529	818
25	805	1280	2730	1520	5580	1790	1540	2540	1270	1080	509	776
26	770	1200	2440	1400	9320	1760	1560	2640	1330	1030	492	739
27	746	1170	2150	1320	7230	1670	1680	2650	1390	986	477	719
28	734	1320	1900	1220	5300	1590	1870	2440	1380	942	464	732
29	772	1350	1690	1130	---	1520	2000	2150	1380	899	451	724
30	795	1570	1540	1070	---	1470	2090	1930	1400	855	440	712
31	783	---	1420	1010	---	1400	---	1820	---	821	431	---
TOTAL	31181	56992	66560	37438	115163	114950	51860	82690	50330	47683	17611	49365
MEAN	1006	1900	2147	1208	4113	3708	1729	2667	1678	1538	568	1646
MAX	1670	3700	3020	2070	9320	12600	3170	4920	2390	3170	797	4180
MIN	734	764	1420	869	880	1400	1230	1820	1240	821	431	451
CFSM	3.81	7.20	8.13	4.58	15.6	14.0	6.55	10.1	6.36	5.83	2.15	6.24
IN.	4.39	8.03	9.38	5.28	16.23	16.20	7.31	11.65	7.09	6.72	2.48	6.96
AC-FT	61850	113000	132000	74260	228400	228000	102900	164000	99830	94580	34930	97920

CAL YR 1978 TOTAL 785066 MEAN 2151 MAX 8760 MIN 625 CFSM 8.15 IN 110.62 AC-FT 1557000
WTR YR 1979 TOTAL 721823 MEAN 1978 MAX 12600 MIN 431 CFSM 7.49 IN 101.71 AC-FT 1432000

12039500 QUINAULT RIVER AT QUINAULT LAKE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-60, 1963-74, 1977 to current year.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1978										
16...	1000	1550	55	7.3	8.6	10	1.0	9.8	4	28
JAN , 1979										
16...	1300	962	60	7.4	5.3	5	1.0	11.3	<2	27
MAR										
19...	1330	2220	65	7.3	6.8	10	1.0	11.5	<1	24
MAY										
14...	1430	2300	57	7.4	11.3	5	1.0	11.6	<1	28
JUL										
17...	1330	1650	70	7.2	17.6	5	1.0	9.8	2	26
SEP										
10...	1500	3820	65	7.4	17.0	10	1.0	9.3	8	27

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)
NOV , 1978										
16...	3	9.4	.8	1.6	11	.1	.2	30	0	25
JAN , 1979										
16...	5	9.5	.7	1.7	12	.1	.1	26	0	21
MAR										
19...	7	8.4	.6	1.9	14	.2	.2	21	0	17
MAY										
14...	6	10	.7	2.2	14	.2	.5	--	--	22
JUL										
17...	7	9.3	.7	1.4	10	.1	.3	23	0	19
SEP										
10...	11	9.7	.6	1.9	13	.2	.2	--	--	16

DATE	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	ARSENIC DIS-SOLVED (UG/L AS AS)
NOV , 1978									
16...	2.4	9.9	1.4	.09	.01	.010	.01	.03	0
JAN , 1979									
16...	1.7	5.8	1.5	.08	.00	.020	.00	.00	0
MAR									
19...	1.7	7.7	2.6	.08	.00	.010	.02	.06	0
MAY									
14...	--	6.9	1.6	.10	.00	.020	.00	.00	0
JUL									
17...	2.3	6.7	2.0	.01	.01	.020	.00	.00	0
SEP									
10...	--	13	1.3	.02	.02	.010	.05	.15	1

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
NOV , 1978									
16...	0	1	0	4	0	.0	1	0	10
JAN , 1979									
16...	9	2	0	3	3	.0	0	0	<3
MAR									
19...	0	0	0	4	0	.0	0	0	20
MAY									
14...	0	1	10	0	0	.1	1	0	10
JUL									
17...	7	<1	0	0	0	1.6	0	0	<3
SEP									
10...	9	<1	0	1	1	.0	0	0	10

12039520 RAFT RIVER BELOW RAINY CREEK NEAR QUEETS, WA

LOCATION.--Lat 47°27'17", long 124°18'58", in SW¼NE¼ sec.27, T.23 N., R.13 W., Grays Harbor County, Hydrologic Unit 17100102, Quinault Indian Reservation, on left bank at the mouth of Rainy Creek, 5.9 mi (9.5 km) south of Queets and at mile 1.4 (2.3 km).

DRAINAGE AREA.--76.0 mi² (196.8 km²).

PERIOD OF RECORD.--April 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 10 ft (3 m), from topographic map.

REMARKS.--Records good except those for period Dec. 29 to Feb. 15, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--5 years, 528 ft³/s (14.95 m³/s), 94.35 in/yr (2,396 mm/yr), 382,500 acre-ft/yr (472 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,200 ft³/s (487 m³/s) Dec. 26, 1975, gage height, 16.57 ft (5.051 m) from rating extended above 5,000 ft³/s (142 m³/s); minimum, 38 ft³/s (1.08 m³/s) Aug. 22, 1977; minimum gage height, 3.12 ft (0.951 m). Aug. 6, 7, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 7,000 ft³/s (198 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 24	2300	*9,060	257	*12.62	3.847

Minimum discharge, 43 ft³/s (1.22 m³/s) June 28, 29, 30, gage height, 3.39 ft (1.033 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	358	130	1240	150	160	750	151	112	79	418	52	67
2	256	166	482	140	140	457	242	106	73	306	52	124
3	193	508	2130	130	130	386	235	100	70	147	52	394
4	166	1640	1380	125	500	3600	402	214	67	97	52	382
5	148	430	462	120	1500	4300	358	1360	207	76	52	605
6	136	249	295	115	3300	2870	228	1050	200	67	52	326
7	127	575	230	110	2000	1420	175	872	127	62	52	189
8	121	1360	200	105	1000	610	394	515	97	334	52	406
9	136	398	260	105	2500	406	538	326	82	306	52	529
10	225	242	850	550	1300	322	402	235	73	238	52	362
11	434	187	1800	450	750	274	506	189	67	326	52	200
12	235	160	580	370	2200	256	1120	165	62	318	52	137
13	166	142	330	310	4500	231	1910	154	65	179	52	106
14	139	130	900	270	1500	214	725	140	65	124	55	88
15	124	142	720	240	450	370	434	127	62	100	57	76
16	118	1490	1050	210	540	362	302	118	67	82	55	67
17	112	725	870	180	3200	306	252	112	85	70	55	62
18	106	422	670	160	1830	256	452	106	88	65	62	57
19	103	1240	390	300	1120	218	418	103	73	60	85	57
20	136	482	310	1500	647	193	282	97	65	57	76	55
21	145	281	390	1000	454	179	228	94	60	52	73	55
22	115	214	560	700	366	165	193	88	55	50	112	52
23	112	181	650	500	362	154	172	88	52	50	94	50
24	193	169	1200	400	3500	144	154	88	50	55	76	47
25	157	169	560	330	5750	140	144	85	47	57	67	45
26	124	157	330	280	2430	140	133	85	45	57	65	45
27	106	157	260	310	2690	140	127	97	45	57	65	62
28	112	418	210	348	1200	133	121	140	43	55	65	115
29	291	319	190	280	---	130	118	127	43	55	62	100
30	260	1300	170	230	---	140	112	97	58	52	62	112
31	166	---	160	190	---	144	---	85	---	52	62	---
TOTAL	5320	14183	19829	10200	46019	19410	11028	7275	2272	4024	1924	4972
MEAN	172	473	640	329	1644	626	368	235	75.7	130	62.1	166
MAX	434	1640	2130	1500	5750	4300	1910	1360	207	418	112	605
MIN	103	130	160	105	130	130	112	85	43	50	52	45
CFSM	2.26	6.22	8.42	4.33	21.6	8.24	4.84	3.09	1.00	1.71	.82	2.18
IN.	2.60	6.94	9.71	4.99	22.52	9.50	5.40	3.56	1.11	1.97	.94	2.43
AC-FT	10550	28130	39330	20230	91280	38500	21870	14430	4510	7980	3820	9860

CAL YR 1978 TOTAL 141978 MEAN 389 MAX 4560 MIN 43 CFSM 5.12 IN 69.49 AC-FT 281600
WTR YR 1979 TOTAL 146456 MEAN 401 MAX 5750 MIN 43 CFSM 5.28 IN 71.69 AC-FT 290500

12040500 QUEETS RIVER NEAR CLEARWATER, WA

(National stream-quality accounting network station)

LOCATION.--Lat 47°32'17", long 124°18'52", in NE¼SW¼ sec.36, T.24 N., R.13 W., Jefferson County, Hydrologic Unit 17100102, Quinault Indian Reservation, on right bank, 2.4 mi (3.9 km) downstream from mouth of Clearwater River, 0.8 mi (1.3 km) east of Queets and at mile 4.6 (7.4 km).

DRAINAGE AREA.--445 mi³ (1,153 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1930 to November 1949, water years 1950-67 (annual maximum), April 1974 to current year.

REVISED RECORDS.--WSP 1316: 1931-49(M).

GAGE.--Water-stage recorder. Datum of gage is 14.5 ft (4.42 m) National Geodetic Vertical Datum of 1929 (river-profile survey). September 15, 1930 to January 22, 1935, at datum 4.0 ft (1.22 m) higher.

REMARKS.--Water-discharge record excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--24 years (water years 1931-49, 1975-79), 4,126 ft³/s (116.8 m³/s), 125.91 in/yr (3,198 mm/yr) 2,989,000 acre-ft (3,690 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,400 ft³/s (3,690 m³/s) Jan. 22, 1935, gage height, 27.0 ft (8.23 m) from flood marks, present datum from rating curve extended above 26,000 ft³/s (736 m³/s) on basis of slope-area measurements at gage height 23.57 ft (7.184 m); minimum 368 ft³/s (10.4 m³/s) Sept. 9, 1944.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 42,000 ft³/s (1,190 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 25	1900	42,500	1,200	17.46	5,322	Mar. 4	2200	*55,000	1,560	*19.22	5.858

Minimum discharge, 538 ft³/s (15.2 m³/s) Aug. 31, Sept. 1, gage height, 5.79 ft (1.765 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2420	1210	4950	1920	1370	6650	1590	2070	1540	2340	886	586
2	2090	1300	3370	1830	1310	5130	1710	1940	1770	1720	840	1740
3	1910	2260	5530	1730	1360	4480	1650	1860	1850	1260	810	4000
4	1780	10500	5460	1620	1580	23300	2010	2910	1770	1120	773	3050
5	1660	3690	3640	1500	7730	29200	2090	6020	2320	1110	747	3870
6	1550	2660	2990	1390	14500	20000	1940	6970	2020	1060	717	2390
7	1480	4600	2580	1330	13000	14900	1800	6450	1540	1060	696	1790
8	1420	9620	2300	1320	9560	8840	2030	4580	1410	3430	682	5170
9	1490	4280	2740	1300	17000	6450	2440	3690	1420	2480	676	6940
10	2020	3150	3120	2430	8660	5240	2370	3090	1480	4500	674	3740
11	2690	2660	9020	2230	7430	4660	2280	2770	1500	4920	670	2620
12	1830	2320	5200	1970	12900	4180	3510	2540	1410	3760	649	2100
13	1590	2040	3770	2020	21600	3600	11200	2470	1370	2690	647	1800
14	1470	1850	7120	1790	11300	3370	6600	2460	1250	2210	660	1610
15	1390	1740	5390	1720	6950	4280	4540	2420	1230	1960	672	1450
16	1330	5170	6530	1580	5700	3620	3530	2300	1330	1840	640	1340
17	1260	5000	5900	1500	11800	3070	3140	2140	1460	1750	631	1230
18	1210	3500	4950	1430	13100	2850	3690	1980	1260	1680	669	1170
19	1160	3770	3780	2040	8240	2570	3370	1950	1230	1590	839	1100
20	1270	2980	3500	5790	6050	2400	3010	1910	1190	1510	798	1060
21	1200	2540	3460	5770	4740	2300	2670	1970	1120	1410	706	1010
22	1080	2260	5640	3440	3930	2190	2490	2010	1080	1270	851	938
23	1090	2040	5680	2820	3500	2120	2390	2040	1040	1190	708	887
24	2000	1940	9080	2510	8210	2090	2300	2020	1060	1140	641	848
25	1390	1860	5570	2160	37500	2000	2160	1880	1150	1110	610	815
26	1190	1720	4180	2010	21200	1950	2090	2060	1230	1080	597	809
27	1100	1710	3460	2020	13400	1780	2190	2110	1230	1060	593	867
28	1100	3140	2980	1860	9050	1670	2230	1980	1150	1010	582	1330
29	1760	2280	2560	1670	---	1700	2140	1610	1160	937	583	1000
30	1600	4520	2290	1540	---	1790	2110	1440	1280	902	570	1050
31	1320	---	2070	1440	---	1670	---	1430	---	909	552	---
TOTAL	47850	98310	138810	65680	282670	180050	87270	83070	41850	56000	21369	58310
MEAN	1544	3277	4478	2119	10100	5808	2909	2680	1395	1807	689	1944
MAX	2690	10500	9080	5790	37500	29200	11200	6970	2320	4920	886	6940
MIN	1080	1210	2070	1300	1310	1670	1590	1430	1040	902	552	586
CFSM	3.47	7.36	10.1	4.76	22.7	13.1	6.54	6.02	3.14	4.06	1.55	4.37
IN.	4.00	8.22	11.60	5.49	23.63	15.05	7.30	6.94	3.50	4.68	1.79	4.87
AC-FT	94910	195000	275300	130300	560700	357100	173100	164800	83010	111100	42390	115700

CAL YR 1978 TOTAL 1137384 MEAN 3116 MAX 20700 MIN 676 CFSM 7.00 IN 95.08 AC-FT 2256000
WTR YR 1979 TOTAL 1161247 MEAN 3181 MAX 37500 MIN 552 CFSM 7.15 IN 97.07 AC-FT 2303000

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1977 to current year.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT , 1978											
24...	1430	2020	72	7.2	9.0	.40	11.3	200	14	42	7
NOV											
15...	1330	1710	69	7.5	3.0	1.5	13.0	12	1	28	11
DEC											
14...	1130	12600	43	6.9	5.5	14	12.3	58	19	16	5
JAN , 1979											
17...	1100	1500	57	7.3	3.0	1.6	12.6	K7	<2	23	4
FEB											
28...	0845	9200	52	7.1	4.0	10	12.2	3	1	18	8
MAR											
20...	1030	2400	53	7.6	5.7	4.6	12.3	3	2	27	12
APR											
17...	1530	3040	49	7.0	6.0	2.6	12.1	1	<1	21	6
MAY											
14...	1630	2470	58	7.3	13.3	4.4	11.0	3	1	29	11
JUN											
20...	1030	1210	71	7.5	12.1	1.8	10.6	8	74	27	9
JUL											
18...	1215	1730	72	7.4	16.0	2.5	9.8	31	11	26	7
AUG											
08...	1515	698	78	7.2	17.7	.60	10.3	2	1	32	10
SEP											
12...	1130	2110	65	7.4	13.0	2.5	11.0	37	6	26	10

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT , 1978											
24...	15	1.1	2.0	9	.1	.1	35	7.6	1.1	.0	5.7
NOV											
15...	9.4	1.1	3.1	19	.3	.3	17	12	2.2	.0	6.0
DEC											
14...	5.0	.8	2.3	24	.3	.4	11	6.0	2.9	.0	4.7
JAN , 1979											
17...	7.6	1.0	2.9	21	.3	.2	19	5.8	3.0	.1	5.0
FEB											
28...	6.1	.7	2.2	21	.2	.2	10	6.9	3.9	.1	5.0
MAR											
20...	9.2	.9	2.8	18	.2	.3	15	7.4	4.8	.0	6.1
APR											
17...	6.9	.9	2.8	22	.3	.2	15	9.0	2.8	.1	6.0
MAY											
14...	10	.9	2.7	17	.2	.0	18	6.6	2.8	.0	4.9
JUN											
20...	10	.6	2.5	16	.2	.3	18	10	2.2	.0	4.0
JUL											
18...	9.0	.9	2.4	16	.2	.4	19	8.5	2.0	.1	5.1
AUG											
08...	11	1.2	2.9	16	.2	.3	22	16	2.3	.1	5.3
SEP											
12...	8.5	1.1	2.9	19	.2	.3	16	10	2.0	.1	5.6

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

WATER QUALITY DATA

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)
OCT , 1978 24...	57	54	.08	311	.00	.00	.28	.28	.05	.23
NOV 15...	46	44	.06	212	.15	.01	.30	.31	.09	.22
DEC 14...	33	29	.04	1120	.40	.01	.15	.16	.00	.16
JAN , 1979 17...	44	38	.06	178	.11	.00	.05	.05	.00	.05
FEB 28...	34	32	.05	845	.16	.02	.05	.07	.03	.04
MAR 20...	40	41	.05	259	.11	.01	.07	.08	.00	.17
APR 17...	40	38	.05	328	.08	.01	.11	.12	.04	.08
MAY 14...	39	39	.05	260	.03	.00	.07	.07	.00	.19
JUN 20...	45	40	.06	147	.01	.02	.16	.18	.04	.14
JUL 18...	37	40	.05	173	.02	.01	.04	.05	.03	.02
AUG 08...	43	52	.06	81.0	.01	.00	.03	.03	.00	.08
SEP 12...	43	41	.06	245	.11	.01	.65	.66	.19	.47

DATE	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1978 24...	.28	1.2	.000	.000	--	.9	.5	152	829	99
NOV 15...	.46	2.0	.010	.010	1.0	--	--	4	18	84
DEC 14...	.56	2.5	.000	.010	5.6	--	--	58	1970	75
JAN , 1979 17...	.16	.71	.010	.010	--	1.1	.3	2	8.1	100
FEB 28...	.23	1.0	.060	.030	2.7	--	--	29	720	80
MAR 20...	.19	.84	.030	.030	2.6	--	--	4	26	97
APR 17...	.20	.89	.010	.010	--	2.0	.3	4	33	77
MAY 14...	.10	.44	.010	.010	1.0	--	--	3	20	89
JUN 20...	.19	.84	.000	.000	.9	--	--	3	9.8	72
JUL 18...	.07	.31	.020	.020	--	.8	.1	3	14	90
AUG 08...	.04	.18	.020	.020	.5	--	--	2	3.8	79
SEP 12...	.77	3.4	.020	.010	1.5	--	--	--	--	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978 24...	1430	0	0	100	100	0	1	1	0	0
JAN , 1979 17...	1100	0	0	0	0	20	0	0	1	0
APR 17...	1530	0	0	0	0	20	1	0	<1	0
JUL 18...	1215	1	0	0	0	20	0	0	<1	0

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

WATER QUALITY DATA

DATE	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)
OCT , 1978 24...	0	0	0	0	0	9	5	4	10	0
JAN , 1979 17...	0	0	1	0	<3	8	5	3	200	160
APR 17...	0	0	0	0	<3	6	6	0	360	320
JUL 18...	0	0	0	0	<3	41	41	0	260	240

DATE	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG)	MERCURY DISSOLVED (UG/L AS HG)
OCT , 1978 24...	10	3	3	0	30	30	0	.0	.0	.0
JAN , 1979 17...	40	6	3	3	0	0	6	.0	.0	.0
APR 17...	40	59	59	0	10	0	10	.0	.0	.0
JUL 18...	20	22	22	0	0	0	5	1.5	1.5	.0

DATE	SELENIUM, TOTAL (UG/L AS SE)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)
OCT , 1978 24...	0	0	0	0	0	0	10	10	0
JAN , 1979 17...	0	0	0	0	0	0	20	20	<3
APR 17...	0	0	0	3	3	0	20	10	9
JUL 18...	0	0	0	0	0	0	40	40	3

DATE	TIME	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2)	CHLOR-B PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPOSURE (DAYS)
NOV , 1978 15...	1330	.236	.236	.240	.000	22
JAN , 1979 17...	1100	3.94	4.09	.210	.000	34
APR 17...	1530	107	108	.730	.160	28
JUL 18...	1215	1.02	2.13	.800	.360	28

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

	NOV 15,78	MAR 20,79	MAY 14,79	JUN 20,79
DATE	NOV 15,78	MAR 20,79	MAY 14,79	JUN 20,79
TIME	1330	1030	1630	1030
TOTAL CELLS/ML	56	20	39	13
DIVERSITY: DIVISION	0.0	0.8	0.0	0.0
.CLASS	0.0	0.8	0.0	0.0
..ORDER	0.0	1.5	0.0	0.0
...FAMILY	1.5	2.0	1.6	0.0
....GENUS	1.5	2.0	1.6	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...OOCYSTACEAE								
....ANKISTRODESMUS	--	-	--	-	--	-	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	5#	25	--	-	--	-
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	--	-	5#	25	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	14#	25	--	-	--	-	--	-
...CYMBELLACEAE								
....CYMBELLA	--	-	5#	25	13#	33	--	-
...FRAGILARIACEAE								
....SYNEDRA	28#	50	--	-	--	-	--	-
...GOMPHONEMATACEAE								
....GOMPHONEMA	14#	25	--	-	--	-	--	-
...NAVICULACEAE								
....NAVICULA	--	-	5#	25	13#	33	13#	100
...NITZSCHIACEAE								
....NITZSCHIA	--	-	--	-	13#	33	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

12040500 QUEETS RIVER NEAR CLEARWATER, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	JUL 18,79		AUG 8,79		SEP 12,79	
TIME	1215		1515		1130	
TOTAL CELLS/ML	13		180		30	
DIVERSITY: DIVISION	0.0		0.6		0.9	
.CLASS	0.0		0.6		0.9	
..ORDER	0.0		0.6		0.9	
...FAMILY	0.0		0.6		1.6	
....GENUS	0.0		0.6		1.6	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...OOCYSTACEAE						
....ANKISTRODESMUS	--	-	--	-	10#	33
...SCENEDESMACEAE						
....ACTINASTRUM	--	-	--	-	10#	33
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	--	-	--	-
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	--	-	--	-	--	-
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	--	-	26	14	--	-
...CYMBELLACEAE						
....CYMBELLA	13#	100	--	-	--	-
...FRAGILARIACEAE						
....SYNEDRA	--	-	--	-	--	-
...GOMPHONEMATACEAE						
....GOMPHONEMA	--	-	--	-	--	-
...NAVICULACEAE						
....NAVICULA	--	-	--	-	10#	33
...NITZSCHIACEAE						
....NITZSCHIA	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..HORMOGONALES						
...OSCILLATORIACEAE						
....OSCILLATORIA	--	-	150#	86	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

12041200 HOH RIVER AT U.S. HIGHWAY 101, NEAR FORKS, WA

LOCATION.--Lat 47°48'25", long 124°14'59", in NE¼NE¼ sec.33, T.27 N., R.12 W., Jefferson County, Hydrologic Unit 17100101, on left bank 250 ft (76 m) downstream from U.S. Highway 101, 1.0 mi (1.6 km) downstream from Hell Roaring Creek, 11.5 mi (18.5 km) southeast of Forks, and at mile 15.4 (24.8 km).

DRAINAGE AREA.--253 m^2 (655 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 163.64 ft (49.877 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--19 years, 2,505 ft^3/s (70.94 m^3/s), 134.46 in/yr (3,415 mm/yr), 1,815,000 acre-ft/yr (2,240 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 46,000 ft^3/s (1,300 m^3/s) Jan. 15, 1961, gage height, 17.74 ft (5.407 m); minimum, 396 ft^3/s (11.2 m^3/s) Nov. 4, 1974; minimum gage height, 2.40 ft (0.732 m) Sept. 27, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft^3/s (453 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 4	2100	*16,500	467	*11.15	3.399

Minimum discharge, 680 ft^3/s (19.3 m^3/s) Feb. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1390	724	1780	1020	704	2750	958	1520	1310	1660	1140	967
2	1240	780	1450	986	686	2310	1000	1440	1680	1240	1060	2030
3	1160	1170	1770	946	710	2090	958	1400	1850	1020	967	2950
4	1140	5350	1970	898	801	7620	1060	2010	1820	985	892	2250
5	1040	2060	1560	858	2010	10100	1090	3250	2060	1070	940	2640
6	1020	1590	1370	808	3780	8800	1090	3520	1920	1070	876	1690
7	1030	2750	1250	759	3700	6970	1040	2750	1450	1110	804	1540
8	1050	4210	1170	731	3170	4670	1140	2140	1300	2730	868	4170
9	1120	2300	1340	717	4830	3500	1270	1790	1320	2290	839	5190
10	1380	1820	1480	978	2980	2910	1230	1580	1430	3810	932	2540
11	1410	1550	3070	1020	2710	2670	1130	1430	1550	3540	900	1720
12	1090	1380	2060	986	3910	2430	1760	1370	1500	2610	908	1380
13	978	1250	1670	994	8170	2170	4280	1400	1330	1890	949	1260
14	986	1150	2380	898	4230	2060	2850	1520	1180	1550	994	1270
15	978	1100	2090	866	2880	2400	2130	1580	1110	1510	985	1300
16	986	1680	2300	815	2390	2090	1730	1590	1140	1650	967	1170
17	930	1780	2250	787	4090	1790	1610	1540	1150	1810	967	1030
18	906	1500	1950	766	4300	1620	2000	1430	1090	1930	967	1070
19	890	1430	1630	922	3090	1480	1750	1440	1130	1890	1050	1090
20	954	1260	1530	2000	2430	1370	1520	1430	1100	1840	949	1140
21	858	1150	1470	1950	2050	1320	1380	1520	1070	1660	967	994
22	766	1080	1940	1410	1780	1260	1310	1660	1040	1350	1080	832
23	829	1020	2030	1250	1620	1240	1300	1920	1020	1210	1030	804
24	1440	994	2890	1150	2920	1240	1270	1810	1060	1240	860	790
25	1040	986	2130	1030	13300	1200	1250	1720	1200	1120	832	825
26	890	930	1770	978	7700	1140	1250	2050	1360	1200	853	900
27	822	970	1570	962	5080	1080	1370	2030	1400	1330	884	924
28	801	1430	1390	890	3620	1030	1510	1610	1290	1120	916	1130
29	970	1190	1250	836	---	1030	1480	1310	1350	1050	940	860
30	850	1750	1160	801	---	1040	1510	1170	1400	1130	839	908
31	773	---	1090	731	---	985	---	1150	---	1230	797	---
TOTAL	31717	48334	54760	30743	99641	84365	45226	54080	40610	50845	28952	47364
MEAN	1023	1611	1766	992	3559	2721	1508	1745	1354	1640	934	1579
MAX	1440	5350	3070	2000	13300	10100	4280	3520	2060	3810	1140	5190
MIN	766	724	1090	717	686	985	958	1150	1020	985	797	790
CFSM	4.04	6.37	6.98	3.92	14.1	10.8	5.96	6.90	5.35	6.48	3.69	6.24
IN.	4.66	7.11	8.05	4.52	14.65	12.40	6.65	7.95	5.97	7.48	4.26	6.96
AC-FT	62910	95870	108600	60980	197600	167300	89710	107300	80550	100900	57430	93950

CAL YR 1978 TOTAL 598061 MEAN 1639 MAX 6970 MIN 724 CFSM 6.48 IN 87.94 AC-FT 1186000
WTR YR 1979 TOTAL 616637 MEAN 1689 MAX 13300 MIN 686 CFSM 6.68 IN 90.67 AC-FT 1223000

12041200 HOH RIVER AT U.S. HIGHWAY 101 NEAR FORKS, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-61, 1962-74, 1977 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: November 1970 to April 1971.

REMARKS.--Records published as 12041000 July 1960 to September 1961.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV , 1978 15...	1100	1080	74	7.6	4.2	5	1.0	12.4	9	37
JAN , 1979 17...	1300	752	82	7.5	4.8	5	.00	12.5	K2	35
MAR 20...	1400	1370	82	7.5	8.2	10	1.0	12.0	<1	34
MAY 15...	0800	1640	82	7.0	8.5	5	1.0	11.3	2	37
JUL 18...	1030	2000	70	7.3	11.0	20	13	10.8	57	28
SEP 11...	1130	1720	59	7.3	10.8	10	8.0	11.0	36	31

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)
NOV , 1978 15...	10	13	1.1	2.0	10	.1	.2	33	0	27
JAN , 1979 17...	9	12	1.1	2.5	14	.2	.1	31	0	25
MAR 20...	7	12	1.0	2.8	14	.2	1.9	33	0	27
MAY 15...	12	13	1.0	2.2	11	.2	.4	--	--	25
JUL 18...	9	10	.7	1.2	8	.1	.4	23	0	19
SEP 11...	8	11	.9	2.0	12	.2	.2	--	--	23

DATE	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	ARSENIC DIS-SOLVED (UG/L AS AS)
NOV , 1978 15...	1.3	9.2	1.7	.14	.05	.010	.00	.00	0
JAN , 1979 17...	1.6	11	2.2	.09	.00	.010	.00	.00	0
MAR 20...	1.7	8.6	2.0	.11	.01	.010	.02	.06	2
MAY 15...	--	12	1.7	.10	.04	.030	.01	.03	0
JUL 18...	1.8	8.3	1.0	.10	.02	.040	.00	.00	0
SEP 11...	--	12	1.6	.13	.01	.010	.04	.12	0

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
NOV , 1978 15...	0	0	0	2	0	.0	2	0	0
JAN , 1979 17...	10	<1	0	2	3	.0	0	1	<3
MAR 20...	0	0	0	44	0	.0	0	0	40
MAY 15...	0	1	0	0	0	.2	0	0	10
JUL 18...	10	<1	0	0	0	.1	0	0	<3
SEP 11...	20	<1	10	3	0	.0	0	0	8

12041230 CHALAAT CREEK AT TREATMENT PLANT, HOH RESERVATION, WA

LOCATION.--Lat 47°44'33", long 124°24'58", in NW¼SW¼ sec.20, T.26 N., R.13 E., Jefferson County, Hoh Indian Reservation, at road crossing near treatment plant, 0.8 mi (1.3 km) upstream from mouth, and 9.9 mi (15.9 km) northwest of Kalaloch.

PERIOD OF RECORD.--August 1977 to May 1979 (discontinued).

WATER QUALITY NOVEMBER 1978 TO MAY 1979

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
NOV , 1978							
28...	1025	1.9	55	6.7	6.2	11.0	1
JAN , 1979							
30...	1015	1.5	53	7.0	1.0	13.1	<1
MAR							
27...	1105	3.4	53	7.1	7.6	10.8	2
MAY							
22...	1050	1.7	52	6.7	13.0	9.7	8

DATE	TIME	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO
NOV , 1978								
28...	1025	13	1	2.8	1.4	5.7	48	.7
JAN , 1979								
30...	1015	13	2	2.5	1.6	6.9	53	.8
MAY								
22...	1050	15	4	3.9	1.3	6.1	46	.7

DATE	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)
NOV , 1978								
28...	--	--	12	--	4.9	8.3	--	--
JAN , 1979								
30...	--	--	11	--	3.5	8.5	--	--
MAY								
22...	13	0	11	4.2	4.7	8.8	32	.04

DATE	TIME	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)
NOV , 1978							
28...	1025	.03	.01	.04	.01	.13	.14
MAY , 1979							
22...	1050	.02	.00	.02	.03	.07	.10

DATE	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
NOV , 1978						
28...	.18	.80	.020	--	.01	.03
MAY , 1979						
22...	.12	.53	.010	.010	.03	.09

DATE	TIME	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)	LEAD, DISSOLVED (UG/L AS PB)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY DISSOLVED (UG/L AS HG)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
MAR , 1979												
27...	1105	0	0	0	10	0	0	--	.1	0	0	20
MAY												
22...	1050	1	0	1	0	0	0	.1	--	0	0	10

12041234 CHALAAT CREEK AT COMMUNITY CENTER, HOH RESERVATION, WA

LOCATION.--Lat 47°44'45", long 124°25'20", in SE¼NE¼ sec.19, T.26 N., R.13 W., Jefferson County, Hoh Indian Reservation, at road crossing near Community Reservation, 0.3 mi (0.5 km) upstream from mouth, and 10.2 mi (16.4 km) northwest of Kalaloch.

PERIOD OF RECORD.--August 1977 to May 1979 (discontinued).

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
NOV , 1978 28...	1135	2.3	65	6.5	6.6	10.0	16
JAN , 1979 30...	1115	2.6	65	6.5	2.2	12.2	<1
MAR 27...	1150	3.9	60	6.8	8.6	9.0	5
MAY 22...	1200	1.8	61	6.5	12.2	10.1	22

DATE	TIME	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	BICAR-BONATE (MG/L AS HCO3)
NOV , 1978 28...	1135	16	0	3.4	1.8	7.2	49	.8	--
JAN , 1979 30...	1115	14	5	3.2	1.5	7.9	54	.9	--
MAY 22...	1200	17	8	4.5	1.5	6.6	44	.7	11

DATE	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)
NOV , 1978 28...	--	16	--	4.5	9.0	--	--	--
JAN , 1979 30...	--	9	--	3.5	10	--	--	--
MAY 22...	0	9	5.6	7.7	10	36	.05	.17

DATE	TIME	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
NOV , 1978 28...	1135	.04	.01	.05	.01	.08	.09	.14	.62	.020	.01	.03
MAY , 1979 22...	1200	.04	.00	.04	.03	.15	.18	.22	.97	.020	.03	.09

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAR , 1979 27...	1150	0	0	0	0	0	1	--	.2	0	0	20
MAY 22...	1200	1	0	1	0	0	0	.1	--	0	0	10

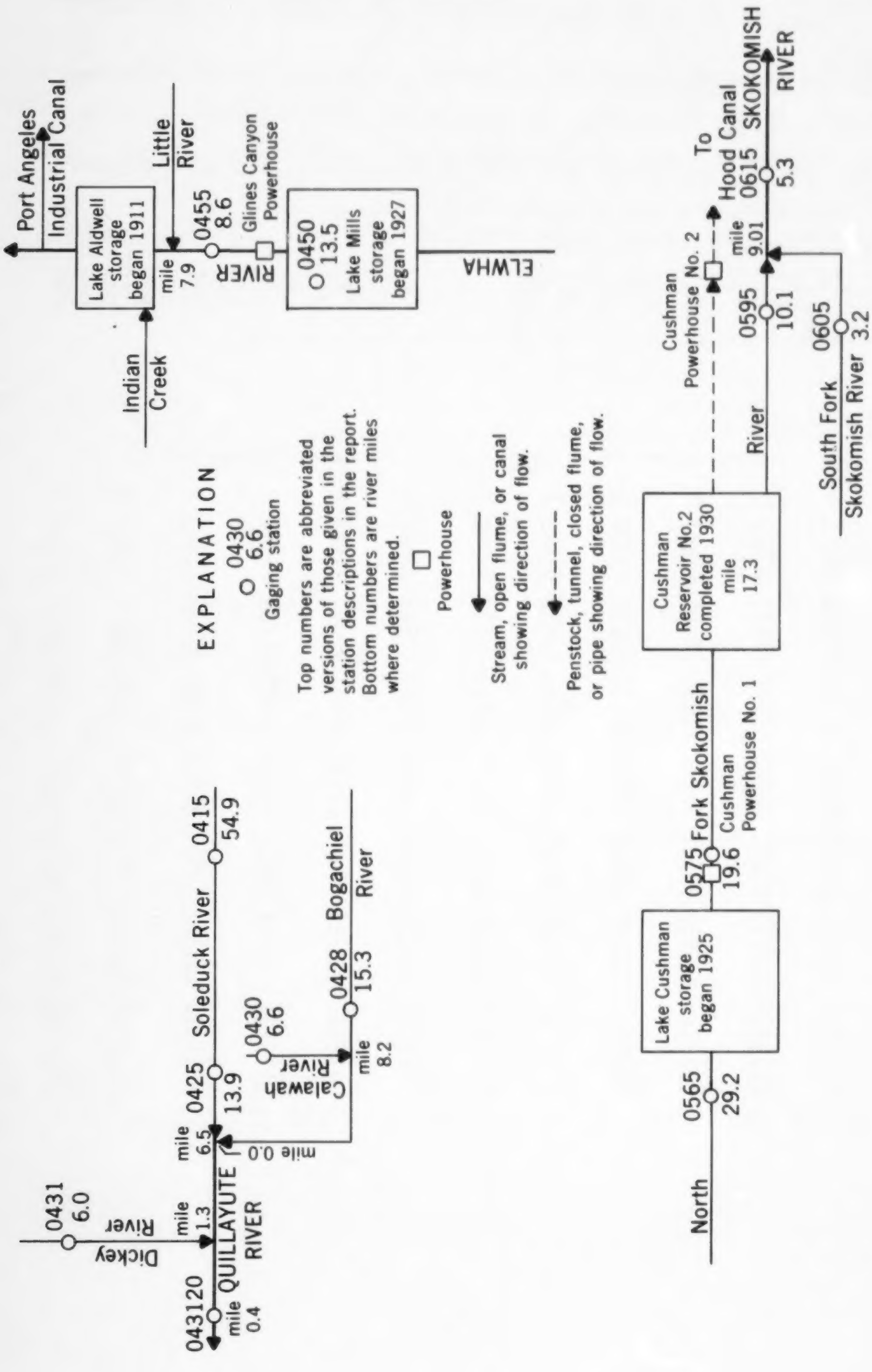
Port Angeles
Industrial Canal
Lake Aldwell storage began 1911
mile 7.9
Little River
0455 8.6
Glines Canyon Powerhouse
RIVER
0450 13.5
Lake Mills storage began 1927
ELWHA
Indian Creek
EXPLANATION
0430 6.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
043120
mile 0.4
QUILLAYUTE RIVER
Dickey River
0431 6.0
mile 1.3
mile 6.5
mile 0.0
0425 13.9
Soleduck River
0415 54.9
Calawah River
0430 6.6
mile 8.2
0428 15.3
Bogachiel River
North
0565 29.2
Lake Cushman storage began 1925
0575 19.6
Fork Skokomish
Cushman Powerhouse No. 1
Cushman Reservoir No.2 completed 1930 mile 17.3
Cushman Powerhouse No. 2
River
0595 10.1
mile 9.01
To Hood Canal
0615 5.3
SKOKOMISH RIVER
0605 3.2
South Fork Skokomish River

Figure 8. Gaging stations in Quillayute, Elwha, and Skokomish River basins.

12041500 SOLEDUCK RIVER NEAR FAIRHOLM, WA

LOCATION.--Lat 48°02'40", long 123°57'28", in lot 4, SE¼SW¼ sec.35, T.30 N., R.10 W., Clallam County, Hydrologic Unit 17100101, Olympic National Park, on right bank 0.1 mi (0.2 km) downstream from South Fork, 2.6 mi (4.2 km) southwest of Fairholm, and at mile 54.9 (88.3 km).

DRAINAGE AREA.--83.8 mi² (217.0 km²).

PERIOD OF RECORD.--October 1917 to September 1921, October 1933 to September 1971, water years 1972-76 (annual maximum), October 1976 to current year.

REVISED RECORDS.--WSP 1182: 1918-19, 1920(M), 1921, 1934-39, 1940(M), 1941-42, 1943(M), 1944-46, 1947-48(M). WSP 1216: Drainage area. WSP 1286: 1939, 1949.

GAGE.--Water-stage recorder. Altitude of gage is 1,060 ft (323 m), from topographic map. October 1917 to September 1921, water-stage recorder and Oct. 4 to Nov. 4, 1933, nonrecording gage, at same site at datum 1.2 ft (0.37 m) higher.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.-- 45 years (water years 1918-21, 1934-71, 1977-79), 620 ft³/s (17.56 m³/s), 100.47 in/yr (2,552 mm/yr), 449,200 acre-ft/yr (554 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,500 ft³/s (666 m³/s) Nov. 26, 1949, gage height, 16.42 ft (5.005 m) from high-water mark in well, from rating curve extended above 13,000 ft³/s (368 m³/s) on basis of slope-area measurement of peak flow; minimum, 51 ft³/s (1.44 m³/s) Sept. 11, 12, 1944; minimum gage height, 0.57 ft (0.174 m) Aug. 31, Sept. 1, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 4	2000	*4,780	135	*6.79	2.070

Minimum discharge, 83 ft³/s (2.35 m³/s) Aug. 31, Sept. 1, gage height, 0.57 ft (0.174 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	240	135	446	238	179	695	296	508	457	370	133	87
2	220	165	380	210	169	590	296	561	561	278	129	129
3	205	605	506	200	169	534	278	543	579	237	125	267
4	195	1430	530	190	177	2450	302	735	552	227	120	247
5	183	542	408	180	415	3000	335	950	611	232	118	270
6	175	412	355	170	762	2720	352	890	512	230	114	181
7	167	900	318	160	963	2040	332	680	394	223	112	163
8	163	1030	297	160	882	1240	380	579	380	384	109	602
9	175	590	312	170	1590	950	391	530	398	293	108	1060
10	193	458	433	267	956	806	356	489	425	489	106	465
11	199	387	1180	235	792	776	329	445	441	421	104	299
12	169	342	675	225	1100	730	588	445	413	359	101	235
13	153	303	526	207	2690	665	1170	481	373	293	100	203
14	145	285	744	197	1260	650	824	530	332	262	101	180
15	136	279	600	189	840	735	630	539	317	242	103	172
16	131	418	558	183	660	670	530	548	320	237	99	153
17	128	418	530	179	963	593	473	507	314	232	98	143
18	124	362	454	173	1160	530	445	481	320	225	98	135
19	119	315	394	191	798	485	409	477	329	217	104	129
20	133	288	362	655	630	453	384	473	311	207	108	125
21	124	273	348	640	530	433	370	530	293	197	105	119
22	116	252	474	425	458	413	370	586	278	185	107	115
23	133	240	470	362	411	405	384	625	278	176	109	112
24	261	240	822	321	680	413	391	561	284	171	105	108
25	167	238	575	282	3860	398	398	561	308	163	96	106
26	140	225	474	261	2130	377	417	635	326	158	92	104
27	130	242	418	245	1230	356	503	598	317	153	90	118
28	136	362	355	225	882	335	584	481	299	147	88	160
29	187	297	303	207	---	329	579	405	302	143	86	120
30	161	432	270	197	---	320	588	373	320	138	85	118
31	142	---	250	185	---	302	---	387	---	135	84	---
TOTAL	5050	12465	14767	7721	27336	25393	13684	17211	11344	7424	3237	6425
MEAN	163	416	476	249	976	819	456	555	378	239	104	214
MAX	261	1430	1180	655	3860	3000	1170	950	611	489	133	1060
MIN	116	135	250	160	169	302	278	373	278	135	84	87
CFSM	1.95	4.96	5.68	2.97	11.6	9.77	5.44	6.62	4.51	2.85	1.24	2.55
IN.	2.24	5.53	6.56	3.43	12.13	11.27	6.07	7.64	5.04	3.30	1.44	2.85
AC-FT	10020	24720	29290	15310	54220	50370	27140	34140	22500	14730	6420	12740

CAL YR 1978 TOTAL 139288 MEAN 382 MAX 2260 MIN 82 CFSM 4.56 IN 61.83 AC-FT 276300
WTR YR 1979 TOTAL 152057 MEAN 417 MAX 3860 MIN 84 CFSM 4.98 IN 67.50 AC-FT 301600

12042500 SOLEDUCK RIVER NEAR QUILLLAYUTE, WA

LOCATION.--Lat 47°57'05", long 124°27'58", in NW¼NE¼ sec.11, T.28 N., R.14 W., Clallam County, Hydrologic Unit 17100101, on left bank 15 ft (4.6 m) upstream from county bridge, 3.9 mi (6.3 km) west of Forks, and at mile 13.9 (22.4 km).

DRAINAGE AREA.--219 mi^2 (567 km^2).

PERIOD OF RECORD.--November 1897 to March 1900, January 1901 to December 1901, October 1977 to current year. November 1897 and peak discharges for 1898-1900, published in WSP 1316.

REVISED RECORDS.--WSP 1316: Drainage area, 1899.

GAGE.--Water-stage recorder. Altitude of gage is 150 ft (46 m) from topographic map. Prior to Dec. 31, 1901, nonrecording gage at different datum.

REMARKS.--Records excellent except those for periods of no gage-height record, Oct. 18 to Dec. 4, Aug. 4-7, and Aug. 10 to Sept. 30, which are fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft^3/s (589 m^3/s) Nov. 1, 1977, gage height, 15.77 ft (4.807 m), from rating curve extended above 13,700 ft^3/s (388 m^3/s); minimum discharge observed, 155 ft^3/s (4.39 m^3/s) Oct. 16, 17, 1901.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 11,000 ft^3/s (312 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	(m^3/s)	Gage height (ft)	(m)
Feb. 25	2300	*9,200	261	*10.75	3.277

Minimum discharge, 178 ft^3/s (5.04 m^3/s) Aug. 31, Sept. 1, gage height, 1.99 ft (0.607 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	610	400	1100	760	521	2560	689	953	608	503	253	180
2	565	500	960	730	508	2160	713	923	671	512	251	260
3	530	1000	1350	700	517	1920	681	875	731	435	245	430
4	502	2700	1400	691	530	3450	708	1020	733	394	240	400
5	477	1400	1100	645	1060	7080	749	1290	751	376	235	460
6	455	900	976	615	1720	6130	737	1660	801	372	230	320
7	437	1800	873	593	3160	4990	724	1380	657	368	230	260
8	423	2000	805	572	2160	3450	729	1170	583	411	225	600
9	447	1300	823	580	3660	2680	833	1070	566	532	221	1500
10	500	1100	878	613	2680	2260	829	980	573	505	220	1000
11	566	960	2130	632	2330	2040	798	907	591	691	215	700
12	505	840	1810	625	2910	1890	869	848	591	607	210	550
13	455	760	1380	642	6620	1720	2280	840	570	534	205	480
14	425	720	1680	599	4340	1580	2140	865	535	473	200	430
15	407	700	1730	567	2740	1630	1600	864	517	432	210	390
16	394	1100	1880	542	2210	1580	1320	857	505	403	205	360
17	381	1100	1800	526	2560	1420	1220	830	491	388	200	330
18	370	1000	1610	510	3850	1300	1340	791	481	375	205	310
19	360	920	1350	534	3040	1190	1290	766	486	364	210	290
20	400	840	1220	832	2450	1120	1160	741	484	353	220	270
21	370	760	1150	1590	2060	1060	1070	747	466	341	220	260
22	340	700	1370	1070	1780	999	1000	780	448	329	215	250
23	400	640	1480	903	1580	951	960	834	432	318	230	240
24	760	620	2120	837	1910	924	922	813	426	308	220	230
25	520	580	1820	745	7360	899	894	777	430	300	210	225
26	440	560	1470	697	6570	866	871	793	444	293	200	220
27	390	600	1290	678	4240	816	880	851	455	286	195	250
28	400	900	1130	631	3200	776	958	815	444	280	190	320
29	540	820	1000	599	---	764	971	689	431	272	165	270
30	460	1050	907	570	---	759	957	627	443	267	185	250
31	420	---	844	543	---	720	---	598	---	260	180	---
TOTAL	14249	29270	41436	21371	78266	61684	30892	27954	16344	12282	6660	12035
MEAN	460	976	1337	689	2795	1990	1030	902	545	396	215	401
MAX	760	2700	2130	1590	7360	7080	2280	1660	801	691	253	1500
MIN	340	400	805	510	508	720	681	598	426	260	180	180
CFSM	2.10	4.46	6.11	3.15	12.8	9.09	4.70	4.12	2.49	1.81	.98	1.83
IN.	2.42	4.97	7.04	3.63	13.29	10.48	5.25	4.75	2.78	2.09	1.13	2.04
AC-FT	28260	58060	82190	42390	155200	122400	61270	55450	32420	24360	13210	23870

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CAL YR 1978  TOTAL  324359   MEAN 889   MAX  5360   MIN 212   CFSM 4.06   IN 55.10   AC-FT  643400
WTR YR 1979  TOTAL  352443   MEAN 966   MAX  7360   MIN 180   CFSM 4.41   IN 59.87   AC-FT  699100
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12042800 BOGACHIEL RIVER NEAR FORKS, WA

LOCATION.--Lat 47°53'40", long 124°21'19", in NE¼NE¼ sec.34, T.28 N., R.13 W., Clallam County, Hydrologic Unit 17100101, on right bank 50 ft (15 m) downstream from U.S. Highway 101, 0.6 mi (1.0 km) downstream from Bear Creek, 4.2 mi (6.8 km) southeast of Forks, and at mile 15.3 (24.6 km).

DRAINAGE AREA.--111 mi^2 (287 km^2).

PERIOD OF RECORD.--April 1975 to current year. Flow of Bear Creek was excluded from low-flow records prior to Oct. 1, 1978.

GAGE.--Water-stage recorder. Altitude of gage is 170 ft (52 m), from topographic map.

REMARKS.--Records good except those above 8,000 ft^3/s (227 m^3/s), which are fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,600 ft^3/s (527 m^3/s), revised, Dec. 2, 1975, gage height, 15.81 ft (4.819 m) from rating curve extended above 6,000 ft^3/s (170 m^3/s) on basis of slope-area measurement at 18.1 ft (5.517 m); minimum 83 ft^3/s (2.35 m^3/s) Aug. 10, 1978, gage height, 7.61 ft (2.320 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 11,000 ft^3/s (312 m^3/s) and maximum (*);

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 4	2000	*12,000	340	*14.06	4.285

Minimum discharge, 106 ft^3/s (3.00 m^3/s) Aug. 25 to Sept. 1, gage height, 7.67 ft (2.338 m).

REVISIONS.--The peak discharges and annual maximum (*) for some water years have been revised as shown in the following table. They supersede figures published in the reports indicated.

WSP	Water year	Date	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
WDR WA-76-1	1976	Oct. 17, 1975	16,300	462	15.24	4.645
		Nov. 15, 1975	10,200	289	13.50	4.115
		Dec. 2, 1975	*18,600	527	*15.81	4.819
		Dec. 26, 1975	15,500	439	15.04	4.584
		Jan. 15, 1976	9,930	281	13.41	4.087
		Jan. 27, 1976	11,900	337	14.03	4.276
WDR WA-77-1	1977	Jan. 18, 1977	*8,220	233	*12.84	3.914
WDR WA-78-1	1978	Nov. 1, 1977	*18,100	513	*15.68	4.779
		Nov. 14, 1977	11,600	329	13.94	4.249
		Nov. 25, 1977	11,200	317	13.82	4.212
		Dec. 2, 1977	12,100	343	14.09	4.295

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	502	301	1040	448	301	1500	334	430	290	376	146	106
2	442	370	736	418	285	1140	400	394	312	275	146	170
3	382	616	1220	400	301	1010	370	370	318	212	146	672
4	358	2170	1200	376	376	6520	454	672	296	186	136	672
5	334	840	830	352	1890	6520	454	1360	454	182	136	704
6	312	608	664	329	3420	4870	430	1720	358	170	132	418
7	296	1920	565	318	2910	3540	388	1410	275	170	129	376
8	285	2390	509	307	2760	2100	544	1000	255	516	125	1480
9	318	1140	728	301	4320	1510	593	810	250	346	129	3130
10	474	810	980	424	2380	1220	572	656	250	688	125	1120
11	544	648	2880	430	2330	1100	516	565	250	760	122	664
12	382	551	1520	418	3560	950	1140	516	230	593	115	488
13	334	481	1060	442	6420	800	3180	502	235	442	115	406
14	307	442	2060	400	3060	752	1810	488	217	376	112	346
15	285	424	1450	376	1850	1030	1160	460	221	318	112	307
16	270	810	1640	352	1450	820	880	442	260	285	112	275
17	260	780	1670	340	3090	688	830	400	250	265	112	250
18	250	664	1300	323	3510	600	1020	376	221	240	115	230
19	235	593	950	430	2260	537	910	352	217	226	143	217
20	285	509	870	2060	1590	495	760	352	208	208	158	217
21	260	460	850	1540	1200	474	664	358	190	199	132	199
22	235	430	1580	860	950	448	608	376	182	190	122	190
23	307	406	1640	680	830	430	579	364	182	182	115	182
24	616	394	2550	586	2380	424	537	340	178	174	115	182
25	358	394	1520	495	8020	400	516	329	182	170	109	170
26	296	364	1100	454	4780	388	481	364	186	166	106	166
27	275	382	880	436	3070	364	502	436	182	158	106	240
28	275	586	704	394	2070	340	495	400	170	154	106	364
29	400	460	593	358	---	352	454	318	174	146	106	265
30	364	980	537	334	---	358	448	296	235	146	106	240
31	352	---	481	312	---	340	---	280	---	143	106	---
TOTAL	10593	21923	36307	15693	71363	42020	22029	17136	7228	8662	3795	14446
MEAN	342	731	1171	506	2549	1355	734	553	241	279	122	482
MAX	616	2390	2880	2060	8020	6520	3180	1720	454	760	158	3130
MIN	235	301	481	301	285	340	334	280	170	143	106	106
CFSM	3.08	6.59	10.6	4.56	23.0	12.2	6.61	4.98	2.17	2.51	1.10	4.34
IN.	3.55	7.35	12.17	5.26	23.92	14.08	7.38	5.74	2.42	2.90	1.27	4.84
AC-FT	21010	43480	72010	31130	141500	83350	43690	33990	14340	17180	7530	28650

CAL YR 1978 TOTAL 242464 MEAN 664 MAX 4480 MIN 85 CFSM 5.98 IN 81.26 AC-FT 480900
WTR YR 1979 TOTAL 271195 MEAN 743 MAX 8020 MIN 106 CFSM 6.69 IN 90.84 AC-FT 537900

12043000 CALAWAH RIVER NEAR FORKS, WA

LOCATION.--Lat 47°57'37", long 124°23'30", in NW¼SW¼ sec.4, T.28 N., R.13 W., Clallam County, Hydrologic Unit 17100101, on left bank 30 ft (9 m) downstream from U.S. Highway 101 bridge, 0.8 mi (1.3 km) northwest of Forks, and at mile 6.6 (10.6 km).

DRAINAGE AREA.--129 mi² (334 km²).

PERIOD OF RECORD.--November 1897 to December 1901, October to December 1975 (discharge measurements and peak discharges), January 1976 to current year. Monthly and peak discharge only, November 1897 and August 1898, published in WSP 1316. Published as Calowa River at Forks, November 1897 to December 1899; as Calowa River near Forks, 1900; and as Kalawa River near Forks, 1901. Chemical analyses October 1976 to September 1978.

REVISED RECORDS.--WSP 1316: 1898-1902. WSP 1736: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 201.58 ft (61.442 m) National Geodetic Vertical Datum of 1929. November 1897 to December 1901, nonrecording gage at same site but at different datum; October to December 1975, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records excellent except those for period of no gage-height record Aug. 24 to Sept. 30, which are fair.

AVERAGE DISCHARGE.--6 years (water years 1899-1901, 1977-79), 1,018 ft³/s (28.83 m³/s), 107.17 in/yr (2,722 mm/yr) 737,500 acre-ft/yr (909 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s (640 m³/s) Dec. 2, 1975, gage height, 16.99 ft (5.179 m), from rating curve extended above 6,000 ft³/s (170 m³/s) on basis of step-backwater analysis; maximum gage height, 17.2 ft (5.24 m), from graph based on gage readings, Nov. 18, 1897; minimum, 15 ft³/s (0.42 m³/s) Sept. 28, 1899.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 10,000 ft³/s (283 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 13	1000	10,700	303	12.44	3.792	Mar. 4	1900	*13,600	385	*13.73	4.185
Feb. 25	1000	12,400	351	13.24	4.036						

Minimum daily discharge, 90 ft³/s (2.55 m³/s) Aug. 27-31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	442	287	1100	420	316	1790	350	363	205	229	111	95
2	397	322	847	380	302	1410	434	339	196	172	109	100
3	369	396	911	350	310	1210	413	321	190	140	108	450
4	344	1710	972	330	337	6250	498	473	185	128	105	440
5	321	856	797	320	1520	6250	559	887	278	122	104	520
6	303	627	676	310	3170	4560	523	1250	220	117	103	370
7	288	1350	585	300	3140	3500	463	1250	193	117	102	320
8	277	2280	522	290	2520	2220	545	929	182	364	101	1600
9	300	1160	614	290	4460	1620	645	744	175	257	100	3100
10	372	828	818	404	2370	1310	727	621	170	610	99	1400
11	450	661	2590	389	2180	1140	679	538	165	695	98	800
12	339	556	1580	400	3460	991	1220	478	160	530	97	500
13	306	473	1110	432	7470	861	3720	447	170	400	96	400
14	288	421	1670	386	3280	788	2110	409	162	328	96	350
15	260	403	1410	366	1990	921	1360	378	177	267	97	300
16	247	647	1620	344	1500	782	1040	355	190	235	95	260
17	238	703	1690	334	3110	694	977	331	177	211	94	230
18	226	683	1450	319	4220	627	1210	314	160	193	101	210
19	217	627	1120	387	2520	570	1150	297	157	180	104	200
20	253	547	972	1460	1850	525	997	285	152	170	106	190
21	226	485	906	1380	1420	492	890	260	142	162	98	180
22	205	440	1570	868	1150	464	793	250	138	155	97	170
23	244	406	1660	711	1000	444	712	244	136	147	95	160
24	452	389	2690	623	2270	428	632	241	128	142	95	150
25	299	390	1630	528	11600	406	561	229	124	136	95	140
26	264	355	1180	487	5590	403	506	229	120	128	95	140
27	247	365	954	461	3290	376	472	292	118	124	90	190
28	247	509	776	416	2410	355	443	306	115	122	90	230
29	392	445	647	387	---	380	413	250	114	118	90	190
30	348	850	574	360	---	393	387	229	147	117	90	160
31	308	---	486	333	---	357	---	214	---	114	90	---
TOTAL	9469	20171	36127	14765	78755	42517	25429	13753	4946	6930	3051	13545
MEAN	305	672	1165	476	2813	1372	848	444	165	224	98.4	452
MAX	452	2280	2690	1460	11600	6250	3720	1250	278	695	111	3100
MIN	205	287	486	290	302	355	350	214	114	114	90	95
CFSM	2.36	5.21	9.03	3.69	21.8	10.6	6.57	3.44	1.28	1.74	.76	3.50
IN.	2.73	5.82	10.42	4.26	22.71	12.26	7.33	3.97	1.43	2.00	.88	3.91
AC-FT	18780	40010	71660	29290	156200	84330	50440	27280	9810	13750	6050	26870

CAL YR 1978 TOTAL 236722 MEAN 649 MAX 4730 MIN 91 CFSM 5.03 IN 68.26 AC-FT 469500
WTR YR 1979 TOTAL 269458 MEAN 738 MAX 11600 MIN 90 CFSM 5.72 IN 77.70 AC-FT 534500

12043100 DICKEY RIVER NEAR LA PUSH, WA

LOCATION.--Lat 47°57'53", long 124°32'53", in NE¼NE¼ sec.6, T.28 N., R.14 W., Clallam County, Hydrologic Unit 17100101, on left bank 1.0 mi (1.6 km) upstream from Colby Creek, 5.5 mi (8.8 km) northeast of La Push and at mile 6.0 (9.7 km).

DRAINAGE AREA.--86.3 mi² (223.5 km²).

PERIOD OF RECORD.--August 1962 to September 1973, water years 1974-76 (annual maximum), October 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 50 ft (15 m), from topographic map.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--14 years (water years 1963-73, 1977-79), 528 ft³/s (14.95 m³/s), 83.09 in/yr (2,110 mm/yr), 382,500 acre-ft/yr (472 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,300 ft³/s (490 m³/s) Jan. 19, 1968, gage height, 22.15 ft (6.751 m) from high-water mark in well, from rating curve extended above 4,900 ft³/s (139 m³/s) on basis of slope-area measurement of peak flow; minimum, 8.9 ft³/s (0.25 m³/s) Aug. 29, 30, 31, 1967, gage height, 0.79 ft (0.241 m).

EXTREMES FOR CURRENT YEAR.--Peak discharge above base 5,000 ft³/s (142 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 25	0300	5,890	167	11.19	3.411	Mar. 4	2100	*5,980	169	*11.29	3.441

Minimum discharge, 13 ft³/s (0.37 m³/s) Aug. 29, 30, 31, Sept. 1, gage height, 0.97 ft (0.296 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	225	155	856	220	155	864	114	116	49	92	21	15
2	198	228	501	200	142	668	145	109	46	79	21	47
3	171	403	852	190	150	550	145	100	42	49	20	192
4	152	808	872	180	207	2710	327	207	41	38	19	539
5	138	463	553	170	1130	3150	349	375	142	33	18	824
6	122	351	413	160	1750	2470	252	543	120	29	18	452
7	111	792	339	150	1480	1570	207	557	75	28	17	372
8	103	1470	291	145	1230	915	243	372	61	111	16	1210
9	142	628	452	140	2410	664	325	318	52	147	16	1350
10	243	452	581	170	1200	518	335	252	47	136	15	628
11	342	354	1290	200	1170	431	323	222	46	177	16	417
12	225	297	672	228	1760	369	517	195	42	171	15	312
13	183	249	494	345	3230	318	1430	183	42	138	15	240
14	150	210	1120	273	1560	279	712	162	39	103	15	180
15	131	189	796	231	925	366	500	142	37	81	16	142
16	122	369	1050	198	960	366	392	129	44	66	15	120
17	116	366	965	180	2200	333	363	118	46	56	14	100
18	105	342	804	162	1850	282	522	109	39	49	14	85
19	96	318	578	273	1490	243	470	96	37	44	18	75
20	129	246	497	764	1020	213	380	85	37	40	17	67
21	138	213	490	660	720	192	315	77	35	37	16	63
22	109	195	776	406	564	171	268	67	32	33	16	58
23	140	177	804	348	483	155	232	63	30	31	15	53
24	410	171	1300	363	1550	142	204	63	28	30	15	49
25	249	201	700	288	4230	136	181	60	27	28	14	46
26	189	183	522	261	1700	147	161	58	25	26	14	44
27	157	174	431	291	1930	140	146	72	24	25	14	66
28	147	342	348	243	1260	122	134	79	22	25	14	198
29	237	276	291	210	---	127	127	67	22	24	14	150
30	243	720	249	192	---	133	118	58	33	22	14	162
31	186	---	240	168	---	122	---	53	---	21	13	---
TOTAL	5409	11342	20127	8009	38456	18866	9937	5107	1362	1969	495	8256
MEAN	174	378	649	258	1373	609	331	165	45.4	63.5	16.0	275
MAX	410	1470	1300	764	4230	3150	1430	557	142	177	21	1350
MIN	96	155	240	140	142	122	114	53	22	21	13	15
CFSM	2.02	4.38	7.52	2.99	15.9	7.06	3.84	1.91	.53	.74	.19	3.19
IN.	2.33	4.89	8.68	3.45	16.58	8.13	4.28	2.20	.59	.85	.21	3.56
AC-FT	10730	22500	39920	15890	76280	37420	19710	10130	2700	3910	982	16380

CAL YR 1978 TOTAL 123987 MEAN 340 MAX 2230 MIN 18 CFSM 3.94 IN 53.44 AC-FT 245900
WTR YR 1979 TOTAL 129335 MEAN 354 MAX 4230 MIN 13 CFSM 4.10 IN 55.75 AC-FT 256500

12043120 QUILLAYUTE RIVER AT LA PUSH, WA

LOCATION.--Lat 47°55'02", long 124°38'03", in NE¼SE¼ sec.21, T.28 N., R.15 N., Clallam County, Hydrologic Unit 17100101, on left bank, 0.5 mi (0.8 km) north of La Push, and at mile 0.7 (1.1 km).

DRAINAGE AREA.--629 mi² (1,620 km²).

PERIOD OF RECORD.--November 1978 to September 1979.

GAGE.--Water-stage recorder. Datum of gage 10.0 ft (3.048 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Station in tidal effect at all stages.

EXTREMES FOR CURRENT YEAR.--Maximum gage height recorded during period November 1978 to September 1979: 22.01 ft (6.709 m) July 10; minimum recorded, 8.53 ft (2.60 m) Aug. 9.

GAGE HEIGHT, IN FEET, NOVEMBER 1978 TO SEPTEMBER 1979

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW
1			---	---	---	---	18.01	9.66			---	---
2			---	---	---	---	18.06	10.21			---	---
3			15.95	9.75	---	---	18.50	11.19			---	---
4			20.10	10.87	---	---	18.39	11.99			---	---
5			17.36	10.42	---	---	18.08	13.23			---	---
6			19.11	10.87	---	---	17.83	12.91			---	---
7			18.88	14.45	---	---	17.93	12.57			---	---
8			---	---	19.06	11.90	18.10	11.97			---	---
9			---	---	18.52	11.94	18.02	11.64			---	---
10			---	---	19.15	12.53	18.34	11.78			19.37	12.23
11			---	---	19.11	13.05	18.32	11.53			19.34	12.08
12			---	---	18.42	11.54	18.28	10.84			19.32	11.82
13			---	---	18.41	11.15	18.19	11.07			19.59	11.97
14			---	---	19.55	12.14	18.18	11.59			19.76	12.28
15			---	---	18.77	11.57	19.77	11.54			20.08	12.68
16			---	---	18.87	12.70	18.42	11.57			19.54	12.49
17			---	---	18.92	12.70	19.64	11.95			19.03	12.19
18			---	---	20.02	12.23	18.48	12.53			18.56	12.08
19			---	---	18.38	12.35	18.56	13.09			17.92	11.86
20			---	---	18.46	12.98	19.38	14.29			17.93	11.93
21			---	---	18.53	13.53	---	---			17.49	12.02
22			---	---	18.99	14.11	---	---			17.74	11.55
23			---	---	18.65	14.62	---	---			18.10	11.12
24			---	---	18.81	14.05	---	---			18.89	10.74
25			---	---	18.10	12.63	---	---			19.81	10.83
26			---	---	18.14	11.72	---	---			20.59	10.94
27			---	---	18.24	10.82	---	---			21.07	11.15
28			---	---	17.98	10.25	---	---			20.85	11.10
29			---	---	17.99	9.81	---	---			20.26	10.50
30			---	---	17.96	9.62	---	---			19.77	10.43
31			---	---	18.06	9.43	---	---			18.67	10.16

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW
1	19.38	10.57			---	---	18.21	12.22	18.45	12.66	20.25	12.29
2	18.26	11.15			---	---	18.45	12.72	18.79	12.22	20.56	12.04
3	18.53	11.76			---	---	18.81	13.16	19.17	11.57	20.95	11.45
4	18.04	12.13			---	---	19.15	12.77	---	---	21.78	10.90
5	17.88	12.37			---	---	19.55	12.04	---	---	20.45	11.10
6	17.91	12.37			18.81	12.01	20.27	11.31	---	---	21.54	10.29
7	18.55	12.29			19.20	10.91	21.11	10.67	---	---	21.75	10.39
8	19.12	12.62			19.59	10.08	18.96	10.53	20.92	12.11	21.82	11.76
9	18.99	12.25			17.67	9.45	21.52	10.03	20.86	8.53	21.22	12.20
10	19.09	12.66			19.95	9.04	22.01	9.82	20.53	8.83	20.22	11.20
11	19.43	12.18			20.26	8.98	21.85	10.16	20.21	9.59	19.55	11.18
12	20.49	11.86			20.52	9.08	21.18	9.89	20.29	10.76	19.15	13.46
13	20.08	14.00			20.52	9.23	20.47	9.93	19.91	11.88	18.94	11.72
14	19.46	12.55			19.95	9.47	19.81	10.33	19.58	11.71	19.11	12.10
15	19.47	11.68			19.34	10.04	19.75	11.13	19.44	11.76	18.88	12.46
16	18.93	11.47			19.37	11.04	19.70	12.15	19.36	11.77	18.70	12.03
17	18.34	11.45			19.55	11.72	19.71	12.19	19.47	11.62	18.96	11.54
18	18.13	11.66			19.53	12.19	19.78	11.78	19.80	11.42	18.61	11.57
19	19.18	11.82			19.74	11.74	19.93	11.33	19.80	11.32	19.22	11.54
20	18.47	11.84			19.84	10.99	19.72	11.01	19.84	10.94	19.52	11.73
21	19.06	11.84			19.71	10.24	19.79	10.21	18.88	10.91	19.55	11.74
22	19.83	11.85			19.47	9.73	17.95	9.86	19.96	10.91	19.36	11.73
23	20.40	11.74			18.18	9.59	19.78	9.69	19.89	10.89	19.30	11.33
24	20.61	11.61			20.04	9.44	19.85	9.96	19.71	11.18	19.32	11.38
25	21.00	10.76			19.81	9.33	19.82	10.15	19.43	11.49	19.58	11.68
26	19.90	10.36			19.53	9.58	19.78	10.49	19.18	11.82	19.50	11.92
27	21.19	10.33			19.14	9.85	19.38	10.76	19.23	12.48	19.47	12.08
28	---	---			18.83	10.22	18.75	11.09	19.13	12.57	18.90	14.50
29	---	---			18.47	10.89	18.74	11.77	19.15	13.53	18.98	12.02
30	---	---			18.14	11.64	18.65	12.32	19.06	12.71	---	---
31	---	---			---	---	18.59	12.78	19.32	12.29	---	---
YEAR:	22.01	8.53										

12043120 QUILLAYUTE RIVER AT LA PUSH, WA--Continued

GAGE HEIGHT, IN FEET, NOVEMBER 1978 TO SEPTEMBER 1979

DAY	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1			---	---	---	---	17.73	12.93			---	---
2			---	---	---	---	17.92	13.19			---	---
3			15.14	12.99	---	---	17.93	13.49			---	---
4			15.82	14.49	---	---	17.99	13.30			---	---
5			14.42	12.91	---	---	17.85	---			---	---
6			16.51	14.18	---	---	17.68	13.15			---	---
7			18.80	14.51	---	---	17.84	13.96			---	---
8			---	---	17.46	12.43	17.91	14.62			---	---
9			---	---	17.63	13.04	18.01	14.91			---	---
10			---	---	18.52	13.36	18.30	15.63			18.65	14.29
11			---	---	18.30	14.88	---	15.69			18.77	14.06
12			---	---	18.32	14.09	16.68	15.26			17.99	13.43
13			---	---	---	14.13	18.13	14.67			---	13.09
14			---	---	19.39	14.84	18.12	15.16			19.61	12.80
15			---	---	18.57	14.46	17.97	15.08			19.82	12.74
16			---	---	18.82	15.50	17.97	14.69			18.86	12.84
17			---	---	18.68	16.55	18.25	14.64			18.64	13.32
18			---	---	18.30	15.53	18.16	14.36			18.12	13.71
19			---	---	18.11	15.33	18.29	14.28			17.33	13.94
20			---	---	18.29	15.40	14.51	14.51			17.66	14.43
21			---	---	18.17	15.11	---	---			17.46	14.69
22			---	---	17.93	15.26	---	---			17.55	---
23			---	---	17.58	---	---	---			17.38	14.21
24			---	---	17.21	14.73	---	---			17.39	13.69
25			---	---	17.52	14.30	---	---			19.73	13.08
26			---	---	18.05	14.28	---	---			18.87	12.66
27			---	---	17.86	14.38	---	---			19.65	11.94
28			---	---	17.82	13.95	---	---			18.64	11.36
29			---	---	17.81	13.75	---	---			---	11.65
30			---	---	---	13.54	---	---			18.44	12.21
31			---	---	17.76	13.05	---	---			18.52	12.61

DAY	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	18.21	13.50			---	---	17.63	---	16.47	13.06	17.93	15.40
2	17.63	14.08			---	---	16.93	13.71	16.36	13.57	18.64	15.30
3	17.23	14.63			---	---	16.70	13.37	16.55	13.85	19.15	14.38
4	17.27	---			---	---	16.66	13.61	---	---	19.82	13.85
5	17.72	14.92			---	---	16.99	13.92	---	---	---	13.05
6	17.82	14.72			16.94	12.90	17.59	14.03	---	---	20.79	12.04
7	17.77	14.11			17.05	12.71	18.41	14.38	---	---	21.44	11.89
8	18.72	14.11			17.42	12.79	---	14.32	19.27	20.92	21.77	12.21
9	18.89	13.42			---	12.77	19.56	14.16	19.77	11.65	20.75	13.51
10	17.60	12.71			18.06	12.89	19.99	13.93	20.02	11.31	19.44	12.25
11	19.10	12.25			18.53	13.13	20.08	13.57	19.95	11.47	18.28	12.60
12	19.35	14.00			19.09	13.59	20.06	13.08	19.45	11.73	17.59	---
13	19.12	14.13			19.01	13.40	19.97	12.82	18.74	---	17.40	13.41
14	---	13.88			19.04	13.40	19.59	12.51	17.77	12.77	17.72	15.10
15	19.03	13.93			19.14	13.43	18.60	---	17.26	13.66	18.11	15.04
16	17.68	14.32			18.92	---	17.87	12.40	17.30	14.32	17.84	14.25
17	17.63	14.54			18.18	13.17	17.33	13.01	17.56	14.49	18.11	13.88
18	18.12	14.73			17.55	12.56	17.22	13.62	18.02	14.67	---	13.39
19	17.20	---			17.25	12.62	17.50	14.13	18.44	14.42	18.89	13.03
20	18.18	14.77			17.38	12.99	17.74	13.86	18.58	14.01	19.33	12.77
21	17.78	14.09			17.54	12.99	17.76	13.72	---	13.60	19.54	12.22
22	18.94	13.50			17.86	13.28	---	13.61	19.10	13.49	19.28	11.90
23	19.36	12.74			---	13.53	18.24	13.54	19.24	13.26	18.92	11.84
24	19.51	11.77			18.25	13.44	18.59	13.73	19.33	12.96	18.58	12.20
25	19.56	12.04			18.14	13.49	18.80	13.70	19.24	12.66	18.59	12.99
26	---	13.78			18.25	13.47	18.85	13.76	18.94	12.72	18.30	13.60
27	19.71	19.62			18.13	13.72	18.77	13.54	18.56	12.75	18.18	14.47
28	---	---			18.15	13.83	18.67	13.38	18.14	12.94	17.50	---
29	---	---			19.21	14.09	18.26	13.37	17.56	---	17.60	14.93
30	---	---			18.03	13.97	17.73	---	17.35	14.37	---	---
31	---	---			---	---	17.02	13.16	17.15	14.63	---	---

YEAR: 21.77 11.31

12043150 OZETTE RIVER AT OZETTE, WA

LOCATION.--Lat 48°09'13", long 124°40'04", in NE¼NE¼ sec.31, T.31 N., R.15 W., Clallam County, Hydrologic Unit 17100101, on right bank, 50 ft (15 m) west of Ozette Ranger station, 75 ft (23 m) upstream from foot bridge, 250 ft (76 m) downstream from Ozette Lake and 3 mi (4.8 km) southeast of Cape Alava.

DRAINAGE AREA.--77.5 mi^2 (200.7 km^2).

PERIOD OF RECORD.--August 1976 to September 1979 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 30 ft (9 m) from topographic map.

REMARKS.--Records good. Flow affected by natural regulation from Ozette Lake. No diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,500 ft^3/s (42.5 m^3/s) Dec. 3, 1977, gage height, 38.50 ft (11.74 m); minimum, 20 ft^3/s (0.57 m^3/s) Aug. 31, 1979, gage height, 31.21 ft (9.513 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,410 ft^3/s (39.9 m^3/s) Mar. 7, gage height, 38.07 ft (11.604 m); minimum, 20 ft^3/s (0.57 m^3/s) Aug. 31, gage height, 31.21 ft (9.513 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	344	183	360	393	228	1210	386	254	126	61	42	22
2	333	191	400	375	221	1160	372	243	121	60	41	25
3	322	207	420	357	215	1100	360	235	118	58	40	32
4	311	236	420	339	216	1130	373	237	116	57	38	51
5	300	246	410	324	253	1270	381	252	119	56	37	79
6	292	247	410	307	308	1380	375	271	115	54	36	89
7	278	271	403	293	380	1390	365	285	113	54	35	101
8	269	344	395	279	412	1340	359	283	109	60	34	131
9	262	354	395	268	500	1280	357	276	105	63	33	162
10	259	347	408	266	538	1210	356	269	101	68	31	174
11	256	339	467	262	559	1150	352	258	97	70	30	175
12	250	327	478	265	594	1090	364	250	95	71	30	173
13	242	315	475	273	730	1030	427	242	92	71	29	169
14	235	310	497	272	793	966	445	234	89	70	28	166
15	227	300	504	264	783	925	442	226	88	68	28	161
16	220	320	513	257	783	891	430	217	87	68	27	155
17	213	350	530	250	858	853	421	208	85	66	27	150
18	206	370	550	243	951	810	419	200	83	65	27	145
19	200	390	544	241	981	767	411	192	81	63	27	141
20	199	380	528	259	970	726	400	184	78	61	27	136
21	194	360	513	285	937	685	386	177	75	59	27	132
22	188	350	511	286	898	646	372	173	73	57	26	127
23	189	340	513	284	861	611	358	166	71	56	26	122
24	197	320	528	283	893	579	343	160	67	54	25	118
25	198	330	524	277	1150	549	329	154	66	52	24	115
26	193	330	511	273	1220	524	314	150	64	50	24	112
27	189	320	494	268	1250	495	302	149	61	49	24	113
28	188	320	475	261	1250	471	289	144	59	47	23	117
29	191	330	453	253	---	448	277	140	58	46	23	119
30	191	340	432	245	---	426	264	135	58	45	22	119
31	188	---	411	236	---	405	---	131	---	43	22	---
TOTAL	7324	9367	14472	8738	19732	27517	11029	6495	2670	1822	913	3631
MEAN	236	312	467	282	705	888	368	210	89.0	58.8	29.5	121
MAX	344	390	550	393	1250	1390	445	285	126	71	42	175
MIN	188	183	360	236	215	405	264	131	58	43	22	22
CFSM	3.05	4.03	6.03	3.64	9.10	11.5	4.75	2.71	1.15	.76	.38	1.56
IN.	3.52	4.50	6.95	4.19	9.47	13.21	5.29	3.12	1.28	.87	.44	1.74
AC-FT	14530	18580	28710	17330	39140	54580	21880	12880	5300	3610	1810	7200

CAL YR 1978 TOTAL 121821 MEAN 334 MAX 816 MIN 44 CFSM 4.31 IN 58.47 AC-FT 241600
WTR YR 1979 TOTAL 113710 MEAN 312 MAX 1390 MIN 22 CFSM 4.03 IN 54.58 AC-FT 225500

12043163 SOOES RIVER BELOW MILLER CREEK NEAR OZETTE, WA

LOCATION.--Lat 48°15'58, long 124°37'30", in NE¼NE¼ sec.21, T.32 N., R.15 W., Clallam County, Hydrologic Unit 17100101, on right bank at downstream side on Crown Zellerback logging road, 0.6 mi (1.0 km) downstream from Miller Creek and 8 mi (13 km) north of Ozette.

DRAINAGE AREA.--32.0 mi^2 (82.9 km^2).

PERIOD OF RECORD.--March 1976 to current year. Chemical analyses April 1976 to March 1977.

REVISED RECORDS.--WRD WA 1977: 1976 (M).

GAGE.--Water-stage recorder. Altitude of gage is 70 ft (21.3 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,270 ft^3/s (92.6 m^3/s) Nov. 25, 1977, gage height, 13.39 ft (4.081 m); minimum, 9.9 ft^3/s (0.28 m^3/s) Aug. 8, 9, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft^3/s (70.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	(m^3/s)	Gage height (ft)	(m)
Nov. 7	2000	*2,310	65.4	*11.94	3.639

Minimum discharge, 10 ft^3/s (0.28 m^3/s) on all or part of each day Aug. 14, 18, 27-31, gage height, 5.51 ft (1.679 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	45	340	76	53	282	68	52	32	36	14	11
2	72	180	188	72	47	216	80	49	30	30	13	24
3	62	157	578	67	54	188	80	47	29	23	13	85
4	58	350	361	62	89	1100	262	79	28	20	13	240
5	52	137	206	57	475	1210	188	152	70	19	13	297
6	48	112	154	53	666	952	121	204	52	17	12	103
7	46	724	129	52	421	593	94	168	36	17	12	105
8	46	564	112	51	433	355	112	111	30	68	12	335
9	49	235	176	50	800	275	141	85	28	62	11	188
10	85	170	252	64	400	224	132	72	26	68	11	105
11	104	136	610	67	394	198	129	66	24	84	11	72
12	62	117	245	106	578	176	310	62	24	71	11	55
13	51	98	174	141	1180	156	666	59	27	47	11	44
14	45	86	469	86	436	141	285	57	26	38	10	37
15	41	86	290	68	272	190	194	52	24	31	11	33
16	41	158	391	62	325	204	148	50	32	27	11	31
17	40	135	427	60	852	174	133	48	29	24	11	29
18	37	158	348	58	540	147	208	45	25	22	11	27
19	35	132	216	109	490	130	152	43	24	22	13	24
20	53	102	182	370	302	120	130	41	23	20	12	24
21	46	90	200	226	218	111	111	39	22	20	12	24
22	38	83	385	135	174	102	94	38	21	19	12	22
23	69	77	350	129	148	96	84	37	22	18	11	21
24	172	78	427	145	624	89	77	35	21	17	11	20
25	71	103	226	102	1360	84	71	34	19	17	11	20
26	54	85	174	96	493	85	66	33	19	16	11	19
27	47	97	146	99	596	82	60	42	19	16	11	35
28	46	192	116	78	403	72	57	50	18	16	10	73
29	71	120	96	68	---	73	55	43	18	16	11	56
30	59	403	85	63	---	74	53	38	22	15	10	60
31	48	---	80	57	---	73	---	35	---	14	11	---
TOTAL	1838	5210	8133	2929	12823	7972	4361	1966	820	930	357	2219
MEAN	59.3	174	262	94.5	458	257	145	63.4	27.3	30.0	11.5	74.0
MAX	172	724	610	370	1360	1210	666	204	70	84	14	335
MIN	35	45	80	50	47	72	53	33	18	14	10	11
CFSM	1.85	5.44	8.19	2.95	14.3	8.03	4.53	1.98	.85	.94	.36	2.31
IN.	2.14	6.06	9.45	3.40	14.91	9.27	5.07	2.29	.95	1.08	.41	2.58
AC-FT	3650	10330	16130	5810	25430	15810	8650	3900	1630	1840	708	4400

CAL YR 1978 TOTAL 52362 MEAN 143 MAX 936 MIN 10 CFSM 4.47 IN 60.87 AC-FT 103900
WTR YR 1979 TOTAL 49558 MEAN 136 MAX 1360 MIN 10 CFSM 4.25 IN 57.61 AC-FT 98300

12043173 WAATCH RIVER BELOW EDUCKET CREEK AT NEAH BAY, WA

LOCATION.--Lat 48°21'25", long 124°37'36", in NW¼SE¼ sec.15, T.33 N., R.15 W., Clallam County, Hydrologic Unit 17100101, Makah Indian Reservation, on left bank at Neah Bay pumping plant, 80 ft (24 m) downstream from Educket Creek, and 0.7 mi (1.1 km) south of Neah Bay.

DRAINAGE AREA.--9.96 mi² (25.80 km²).

PERIOD OF RECORD.--May 1976 to September 1979 (discontinued). Chemical analyses April 1976 to November 1977.

REVISED RECORDS.--WDR WA-77-1: 1976(m), WDR WA-78-1: 1977.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (6 m), from topographic map.

REMARKS.--Records good except those for period of no gage-height record Apr. 23 to June 5 and period of shifting control June 6 to Sept. 30, which are fair. Makah Water Utility diverts approximately 21 acre-ft (25,900 m³/yr) annually at the gage for municipal use. No regulation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,180 ft³/s (33.4 m³/s) Nov. 25, 1977, gage height, 8.76 ft (2.670 m); minimum, 0.12 ft³/s (0.003 m³/s) Aug. 9, 1978, gage height, 0.62 ft (0.189 m).

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 950 ft³/s (26.9 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 7	1800	*935	26.5	*7.94	2.420

Minimum discharge, 0.68 ft³/s (0.019 m³/s) Aug. 24, gage height, 0.81 ft (0.247 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	11	120	17	12	87	9.1	12	5.0	11	2.8	1.2
2	32	45	63	16	11	60	9.6	11	5.0	6.9	2.9	10
3	24	47	257	15	13	49	10	11	4.5	5.0	2.7	20
4	20	105	117	14	29	370	120	17	4.0	3.6	2.5	70
5	17	40	60	13	125	402	64	30	7.0	3.2	2.8	90
6	14	39	42	12	215	290	36	42	9.9	2.7	2.2	38
7	13	283	32	12	124	168	27	45	7.1	2.8	1.4	62
8	13	168	26	12	173	83	30	35	6.1	50	1.4	89
9	16	71	36	12	307	53	39	30	5.2	22	1.4	39
10	34	47	107	17	139	40	38	25	4.9	40	1.4	25
11	31	35	209	18	121	35	38	22	4.4	41	1.6	20
12	19	27	83	37	229	31	162	19	3.8	31	1.4	15
13	16	22	54	32	417	27	246	17	5.5	23	1.0	12
14	15	19	142	26	139	23	105	15	4.1	18	1.4	11
15	12	19	88	24	72	37	59	14	5.6	14	1.6	8.7
16	11	34	140	21	100	40	40	13	8.5	12	1.4	8.1
17	10	28	179	21	325	36	33	12	5.8	9.1	1.3	7.4
18	9.4	39	126	20	180	31	42	11	4.8	8.1	1.3	6.4
19	8.7	33	70	28	166	27	45	10	4.9	7.6	2.5	5.7
20	15	26	49	129	91	24	39	9.0	4.3	6.4	1.7	5.9
21	10	22	50	73	60	21	31	8.5	3.6	6.3	1.2	5.7
22	8.7	20	99	42	44	18	26	8.0	3.5	5.7	1.7	4.8
23	24	18	96	37	38	16	22	7.5	3.4	5.2	1.2	4.5
24	36	20	105	36	263	15	20	7.5	3.2	4.7	.94	4.2
25	17	31	58	26	423	13	18	7.0	2.7	4.5	.76	3.7
26	13	22	42	24	162	14	16	6.5	2.5	4.4	.80	4.0
27	11	41	34	22	257	12	15	8.0	2.5	4.2	.80	15
28	11	59	27	19	143	11	14	9.0	2.0	4.0	.94	19
29	13	44	22	17	---	11	13	7.0	2.0	3.6	.87	20
30	12	191	20	15	---	11	12	6.0	6.7	3.4	.80	16
31	11	---	18	13	---	9.9	---	5.5	---	3.2	.87	---
TOTAL	539.8	1606	2571	820	4378	2064.9	1378.7	480.5	142.5	366.6	47.58	641.3
MEAN	17.4	53.5	82.9	26.5	156	66.6	46.0	15.5	4.75	11.8	1.53	21.4
MAX	43	283	257	129	423	402	246	45	9.9	50	2.9	90
MIN	8.7	11	18	12	11	9.9	9.1	5.5	2.0	2.7	.76	1.2
AC-FT	1070	3190	5100	1630	8680	4100	2730	953	283	727	94	1270

CAL YR 1978 TOTAL 15650.10 MEAN 42.9 MAX 345 MIN 0.60 AC-FT 31040
WTR YR 1979 TOTAL 15036.88 MEAN 41.2 MAX 423 MIN .76 AC-FT 29830

12043190 SAIL RIVER NEAR NEAH BAY, WA

LOCATION--Lat 48°21'27", long 124°33'37", in NW¼SE¼ sec.18, T.33 N., R.14 W., Clallam County, Hydrologic Unit 17100101, Makah Indian Reservation, on right bank 100 ft (30 m) upstream from State Highway 112, 0.2 mi (0.3 km) upstream from mouth, and 3.0 mi (4.8 km) east of Neah Bay.

DRAINAGE AREA.--5.42 mi² (14.04 km²).

PERIOD OF RECORD.--June 1976 to September 1979 (discontinued). Chemical analyses April 1976 to November 1977.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (6 m), from topographic map.

REMARKS.--Records excellent. No regulation. Minor diversion above station for domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 762 ft³/s (21.6 m³/s) Nov. 25, 1977, gage height, 6.08 ft (1.817 m); minimum, 0.41 ft³/s (0.012 m³/s) Aug. 8, 9, 1978, gage height, 2.94 ft (0.896 m).

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 7	1800	*491	13.9	*5.36	1.634

Minimum discharge, 0.78 ft³/s (0.022 m³/s) on all or part of each day Aug. 26-31, gage height, 2.98 ft (0.908 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	5.3	73	9.0	8.1	59	4.0	4.9	2.4	4.0	1.4	1.4
2	25	22	47	8.0	7.6	40	4.0	4.6	2.2	2.8	1.4	5.3
3	22	25	109	7.6	8.1	33	4.0	4.3	2.0	2.4	1.3	8.1
4	19	55	83	7.1	12	208	13	6.7	2.4	2.0	1.3	24
5	15	35	47	6.3	53	253	9.8	12	9.2	1.9	1.1	38
6	13	32	32	6.0	113	195	8.1	22	3.8	1.7	1.1	18
7	11	162	23	5.6	100	103	6.7	22	3.0	1.9	1.0	28
8	10	137	18	4.9	115	58	10	20	2.8	14	1.0	52
9	10	59	22	4.9	210	38	11	17	2.6	7.1	1.0	33
10	19	37	40	7.1	100	27	12	15	2.4	15	.90	22
11	20	26	129	6.0	83	21	12	13	2.2	18	1.0	16
12	15	19	69	10	143	16	59	12	2.2	15	1.0	12
13	13	15	43	11	322	13	147	11	2.8	11	.90	8.6
14	11	12	78	9.2	123	12	76	9.2	2.6	8.6	1.0	7.1
15	9.2	12	64	8.6	59	17	45	8.1	4.0	6.7	1.1	6.0
16	8.6	16	92	8.1	56	16	31	7.1	4.9	5.3	1.1	5.3
17	7.6	12	94	8.1	147	16	24	6.3	3.5	4.6	1.0	4.6
18	6.7	17	83	8.1	127	15	23	6.0	3.0	4.0	1.1	4.0
19	6.0	16	55	14	98	13	23	5.3	3.0	3.8	1.6	3.8
20	7.1	15	39	53	66	12	21	4.9	2.8	3.3	1.1	3.5
21	5.6	13	35	47	43	10	18	4.3	2.6	3.0	1.1	3.5
22	5.3	12	63	32	31	9.2	15	4.0	2.4	2.8	1.4	3.0
23	12	10	64	28	25	8.1	13	4.0	2.4	2.6	1.1	2.8
24	18	11	78	24	123	7.1	11	4.0	2.2	2.4	1.0	2.8
25	11	12	49	20	322	6.3	9.8	3.5	2.0	2.2	.90	2.6
26	8.6	10	34	18	119	6.3	8.1	3.5	1.9	2.0	.90	2.8
27	7.6	15	25	15	133	5.6	7.1	3.8	1.9	2.0	.78	8.6
28	7.1	24	19	13	92	5.2	6.3	3.3	1.9	1.9	.78	8.1
29	8.1	22	15	11	---	4.9	6.0	3.0	1.7	1.7	.90	8.6
30	6.3	71	13	10	---	4.9	5.3	2.6	3.8	1.6	.90	7.1
31	6.0	---	11	9.2	---	4.3	---	2.6	---	1.6	.90	---
TOTAL	372.8	929.3	1646	429.8	2838.8	1236.9	643.2	250.0	86.6	156.9	33.06	350.6
MEAN	12.0	31.0	53.1	13.9	101	39.9	21.4	8.06	2.89	5.06	1.07	11.7
MAX	29	162	129	53	322	253	147	22	9.2	18	1.6	52
MIN	5.3	5.3	11	4.9	7.6	4.3	4.0	2.6	1.7	1.6	.78	1.4
CFSM	2.21	5.72	9.80	2.57	18.6	7.36	3.95	1.49	.53	.93	.20	2.16
IN.	2.56	6.38	11.30	2.95	19.48	8.49	4.41	1.72	.59	1.08	.23	2.41
AC-FT	739	1840	3260	853	5630	2450	1280	496	172	311	66	695

CAL YR 1978 TOTAL 10484.21 MEAN 28.7 MAX 232 MIN .49 CFSM 5.30 IN 71.94 AC-FT 20800
WTR YR 1979 TOTAL 8973.96 MEAN 24.6 MAX 322 MIN .78 CFSM 4.54 IN 61.58 AC-FT 17800

12045000 LAKE MILLS AT GLINES CANYON, NEAR PORT ANGELES, WA

LOCATION.--Lat 48°00'08", long 123°35'55", in SW¼SE¼ sec.17, T.29 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympic National Park, at Glines Canyon Dam on Elwha River 2 mi (3.2 km) upstream from Griff Creek, 4.1 mi (6.6 km) south of Elwha, and 11 mi (17.7 km) southwest of Port Angeles.

DRAINAGE AREA.--245 mi^2 (635 km^2).

PERIOD OF RECORD.--April 1927 to current year. Prior to October 1950 monthly change in contents, published in WSP 1316.

GAGE.--Nonrecording gage. Datum of gage is 19.67 ft (6.00 m) below National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by concrete dam, completed in 1927; storage began Apr. 1, 1927. Usable capacity, 7,460 acre-ft (9.20 hm^3) between gage heights 592.0 ft (180.44 m), normal minimum operation level, and 610.0 ft (185.93 m), top of spillway gates. Storage below gage height 592.0 ft (180.44 m), 31,190 acre-ft (38.5 hm^3). Figures given herein represent total contents. Water is used for power by Crown Zellerbach Corp.

COOPERATION.--Gage height record furnished by Crown Zellerbach Corp.

EXTREMES FOR PERIOD OF RECORD.-- Maximum contents observed, 39,940 acre-ft (49.2 hm^3) Dec. 22, 1936, gage height, 613.0 ft (186.84 m); minimum observed since reservoir first filled in May 1927, 24,290 acre-ft (29.9 hm^3) Nov. 14, 1929, gage height, 574.4 ft (175.08 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 39,080 acre-ft (48.2 hm^3) May 23, gage height, 611.0 ft (186.23 m); minimum observed, 30,510 acre-ft (37.6 hm^3) Jan. 4-8, gage height, 590.3 ft (179.92 m).

MONTHEND GAGE HEIGHTS AND CONTENTS AT 2400 WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	606.9	37,328	-
Oct. 31	602.4	35,438	-1,890
Nov. 30	603.0	35,690	+252
Dec. 31	591.0	30,790	-4,900
CAL YR 1978	-	-	-7,688
Jan. 31	595.5	32,605	+1,815
Feb. 28	609.3	38,349	+5,744
Mar. 31	603.4	35,858	-2,491
Apr. 30	609.0	38,220	+2,362
May 31	609.5	38,435	+215
June 30	609.7	38,521	+86
July 31	608.6	38,048	-473
Aug. 31	609.8	38,564	+516
Sept. 30	607.1	37,412	-1,152
WTR YR 1979	-	-	+84

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 48°03'18", long 123°34'55", in NE¼NW¼ sec.33, T.30 N., R.7 W., Clallam County, Hydrologic Unit 17110020, Olympic National Forest, on right bank 300 ft (91 m) upstream from site of McDonald Bridge (now removed), 0.7 mi (1.1 km) upstream from Little River, 8 mi (12.9 km) southwest of Port Angeles, and at mile 8.6 (13.8 km).

DRAINAGE AREA.--269 mi^2 (697 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.-October 1897 to December 1901, October 1918 to current year. Published as "at McDonald" October 1897 to December 1901.

REVISED RECORDS.--WSP 1246: Drainage area. WSP 1286: 1898, 1899(M), 1900-1902, 1919, 1920-31(M) 1932, 1933(M). WSP 1566: 1957(m).

GAGE.--Water-stage recorder. Datum of gage is 200.00 ft (60.960 m) National Geodetic Vertical Datum of 1929. Oct. 1, 1897, to Dec. 31, 1901, nonrecording gage at McDonald Bridge at different datum. Dec. 9, 1918, to May 1, 1936, water- stage recorder under McDonald Bridge at datum 7.4 ft (2.26 m) higher.

REMARKS.--Water-discharge records excellent. Water is diverted through Glines Canyon powerhouse and returned to river above gage. Flow partly regulated by Lake Mills 4.9 mi (7.9 km) upstream (see sta 12045000).

AVERAGE DISCHARGE.--65 years (water years 1898-1901, 1919-1979), 1,504 ft^3/s (42.59 m^3/s), 75.93 in/yr (1,929 mm/yr), 1,090,000 acre-ft/yr (1,340 hm^3/yr) adjusted for storage since April 1927.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,600 ft^3/s (1,180 m^3/s) Nov. 18, 1897, gage height, 14.5 ft (4.42 m), from graph based on gage readings, site and datum then in use, from rating curve extended above 3,300 ft^3/s (93.5 m^3/s) on basis of two determinations of flow over dam at discharge 26,700 ft^3/s (756 m^3/s) and 30,100 ft^3/s (852 m^3/s), referred to 1897 datum; minimum daily, 10 ft/s (0.28 m^3/s) Oct. 3, 1938.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,180 ft^3/s (232 m^3/s) Nov. 4, gage height, 15.09 ft (4.599 m); minimum, 274 ft^3/s (7.76 m^3/s) Apr. 13, gage height, 8.85 ft (2.697 m); minimum daily, 346 ft^3/s (9.80 m^3/s) Jan. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	770	390	836	435	375	1360	1100	1530	1680	1220	770	435
2	728	385	818	435	365	1230	806	1580	2010	1290	656	806
3	650	638	800	440	365	1250	824	1660	2320	1070	638	1120
4	608	2900	806	395	365	2400	704	2100	2290	820	686	1080
5	620	1080	794	395	440	4600	710	2470	2310	994	602	1000
6	620	860	716	375	555	5340	818	2300	2150	1070	500	902
7	560	1520	698	355	782	4580	830	2010	1720	1080	560	722
8	535	2070	668	346	812	2830	752	1620	1640	1570	450	1060
9	535	1300	668	355	866	2160	800	1450	1630	1530	490	1860
10	608	960	674	415	860	2000	836	1450	1780	1700	545	1350
11	578	818	936	430	878	1960	764	1440	1930	1670	560	722
12	540	758	842	430	1090	1950	662	1290	1910	1350	525	540
13	450	716	740	455	2680	1580	872	1410	1760	1190	525	475
14	495	686	976	480	2110	1660	866	1540	1460	1160	608	535
15	495	656	1090	410	1370	1760	896	1570	1300	1150	584	566
16	490	764	1120	365	1200	1650	908	1680	1230	1170	545	500
17	485	896	1260	370	1380	1470	842	1780	1350	1050	530	535
18	470	800	1080	380	1610	1430	812	1800	1140	1020	530	590
19	465	854	896	380	1220	1420	782	1730	1430	1220	540	530
20	460	770	758	460	1020	1310	800	1770	1400	1160	540	520
21	460	674	680	500	928	1240	782	1940	1220	1160	545	490
22	455	638	644	470	878	1230	836	2170	1310	1150	530	505
23	455	674	608	515	818	1230	854	2590	1230	936	510	445
24	668	540	680	510	824	1230	854	2300	1220	842	505	445
25	480	540	680	490	4040	1210	872	2220	1410	746	480	440
26	430	555	644	495	3370	1190	872	2610	1480	710	465	435
27	415	608	602	455	1900	1100	1020	2400	1500	710	495	450
28	455	764	535	420	1390	952	1210	1990	1460	740	485	475
29	450	758	490	420	---	944	1240	1640	1470	806	480	465
30	410	758	465	395	---	976	1370	1520	1340	896	465	460
31	410	---	465	380	---	1160	---	1560	---	812	450	---
TOTAL	16250	26330	23669	13156	34491	56402	26294	57120	48080	33992	16794	20458
MEAN	524	878	764	424	1232	1819	876	1843	1603	1097	542	682
MAX	770	2900	1260	515	4040	5340	1370	2610	2320	1700	770	1860
MIN	410	385	465	346	365	944	662	1290	1140	710	450	435
AC-FT	32230	52230	46950	26090	68410	111900	52150	113300	95370	67420	33310	40580
†	-1,890	+252	-4,900	+1,815	+5,744	-2,491	+2,362	+215	+86	-473	+516	-1,152
MEAN‡	493	882	684	454	1,335	1,779	916	1,846	1,605	1,089	550	663
CFSM‡	1.83	3.28	2.54	1.69	4.96	6.61	3.41	6.86	5.97	4.05	2.04	2.46
IN‡	2.11	3.66	2.93	1.94	5.17	7.63	3.80	7.91	6.65	4.67	2.36	2.75
AC-FT‡	30,340	52,480	42,050	27,900	74,150	109,400	54,510	113,500	95,460	66,950	33,830	39,430

CAL YR 1978: TOTAL 421,869 MEAN 1,156 MAX 3,300 MIN 385 AC-FT 836,800
DO.....: MEAN‡ 1,145 CFSM‡ 4.26 IN‡ 57.79 AC-FT‡ 829,100
WTR YR 1979: TOTAL 373,036 MEAN 1,022 MAX 5,340 MIN 346 AC-FT 739,900
DO.....: MEAN‡ 1,022 CFSM‡ 3.80 IN† 51.58 AC-FT‡ 740,000

† Change in contents, in acre-feet, in Lake Mills.
‡ Adjusted for change in contents in Lake Mills.

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-60, 1962-70, 1972 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: April 1976 to August 1977.

REMARKS.--Prior to 1962 published as "Elwah River near Port Angeles". October 1971 to September 1974 published as Elwha River below Little River near Port Angeles.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT , 1978											
25...	1030	450	73	7.6	6.6	2.0	11.3	1	<1	27	6
NOV											
28...	1245	860	91	7.7	4.6	7.4	13.1	5	2	40	5
DEC											
15...	1055	1090	102	7.7	3.3	1.8	13.2	<1	<1	43	8
JAN , 1979											
18...	0930	380	101	7.7	1.2	1.6	13.4	<1	<1	46	10
FEB											
13...	1600	2880	92	7.8	3.0	2.7	13.2	<1	2	43	12
MAR											
21...	1100	1240	80	7.4	6.0	5.0	12.4	<1	<1	55	21
APR											
18...	0930	812	99	7.9	6.0	.60	12.7	<1	<1	43	10
MAY											
15...	1230	1660	90	7.5	9.5	2.0	11.3	<1	<1	40	15
JUN											
21...	1000	1110	72	8.0	9.5	1.3	11.1	<1	2	36	13
JUL											
17...	0730	1020	78	7.2	12.9	1.2	11.0	1	44	31	9
AUG											
15...	0745	596	86	7.5	14.0	1.7	10.1	5	32	40	14
SEP											
12...	0900	576	82	7.1	7.1	5.4	10.6	5	28	37	11

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT , 1978											
25...	9.0	1.0	2.8	18	.2	.3	21	7.0	2.7	.0	5.2
NOV											
28...	14	1.1	1.9	9	.1	.2	35	11	1.1	.0	5.4
DEC											
15...	15	1.3	2.1	10	.1	.3	35	9.3	1.0	.0	6.0
JAN , 1979											
18...	16	1.5	2.4	10	.2	.2	36	10	1.2	.1	6.3
FEB											
13...	15	1.4	2.3	10	.2	.1	31	9.5	1.6	.1	6.7
MAR											
21...	14	4.9	2.1	8	.1	.2	34	15	1.2	.1	6.5
APR											
18...	15	1.4	2.2	10	.1	.1	33	12	.9	.1	6.6
MAY											
15...	14	1.2	2.2	11	.2	.0	25	7.0	1.5	.1	5.0
JUN											
21...	13	.8	1.8	10	.1	.2	23	7.6	.8	.0	3.8
JUL											
17...	11	.9	1.4	9	.1	.3	22	13	.9	.1	4.7
AUG											
15...	14	1.1	2.3	12	.2	.1	26	11	.8	.1	5.6
SEP											
12...	13	1.1	2.0	12	.1	.1	26	11	3.1	.1	5.2

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER QUALITY DATA

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)
OCT , 1978										
25...	45	41	.06	54.7	.02	.01	.18	.19	.04	.15
NOV										
28...	54	56	.07	125	.03	.01	.09	.10	.00	.13
DEC										
15...	52	56	.07	153	.04	.00	.05	.05	.02	.03
JAN , 1979										
18...	67	60	.09	68.7	.10	.00	.04	.04	.00	.06
FEB										
13...	60	55	.08	467	.05	.02	.01	.03	.00	.05
MAR										
21...	52	64	.07	174	.02	.00	.02	.02	.00	.04
APR										
18...	54	58	.07	118	.02	.01	.12	.13	.07	.06
MAY										
15...	58	46	.08	260	.01	.00	.06	.06	.04	.02
JUN										
21...	48	42	.07	144	.02	.02	.04	.06	.06	.00
JUL										
17...	42	46	.06	116	.01	.02	.06	.08	.00	.17
AUG										
15...	50	51	.07	80.5	.05	.00	.11	.11	.00	.18
SEP										
12...	--	52	.12	80.9	.02	.01	.22	.23	.01	.22

DATE	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1978										
25...	.21	.93	.010	.000	--	3.6	.3	5	6.1	85
NOV										
28...	.13	.58	.020	.010	.9	--	--	9	21	95
DEC										
15...	.09	.40	.000	.010	.7	--	--	3	8.8	88
JAN , 1979										
18...	.14	.62	.010	.010	--	.8	--	2	2.1	91
FEB										
13...	.08	.35	.040	.020	.8	--	--	9	70	91
MAR										
21...	.04	.18	.010	.010	1.6	--	--	7	23	81
APR										
18...	.15	.66	.010	.000	--	1.3	.2	2	4.4	63
MAY										
15...	.07	.31	.000	.040	1.8	--	--	3	13	82
JUN										
21...	.08	.35	.000	.000	.4	--	--	2	6.0	86
JUL										
17...	.09	.40	.010	.000	--	.4	.0	4	11	77
AUG										
15...	.16	.71	.020	.000	1.0	--	--	3	4.8	92
SEP										
12...	.25	1.1	.030	.010	--	--	--	12	19	100

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978										
25...	1030	0	0	0	0	0	1	0	2	0
JAN , 1979										
18...	0930	1	0	0	0	10	1	0	2	0
APR										
18...	0930	0	0	0	0	4	1	0	2	0
JUL										
17...	0730	1	0	0	0	<2	1	0	3	10
SEP										
12...	0900	--	2	--	--	20	--	--	<1	--

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER QUALITY DATA

DATE	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)
OCT , 1978										
25...	0	0	0	0	0	7	3	4	520	430
JAN , 1979										
18...	0	0	2	0	<3	11	10	1	300	150
APR										
18...	0	0	0	0	<3	8	8	0	140	130
JUL										
17...	10	0	0	0	<3	21	21	0	170	160
SEP										
12...	--	10	--	--	<3	--	--	2	--	--

DATE	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG)	MERCURY DISSOLVED (UG/L AS HG)
OCT , 1978										
25...	90	10	10	0	30	20	10	.0	.0	.0
JAN , 1979										
18...	150	5	2	3	60	0	70	.0	.0	.0
APR										
18...	10	66	66	0	20	10	9	.0	.0	.0
JUL										
17...	10	5	5	0	20	20	<1	.0	.0	.0
SEP										
12...	100	--	--	0	--	--	5	--	--	.0

DATE	SELENIUM, TOTAL (UG/L AS SE)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)
OCT , 1978									
25...	0	0	0	0	0	0	20	10	10
JAN , 1979									
18...	0	0	0	0	0	0	30	20	6
APR									
18...	0	0	0	3	3	0	10	7	<3
JUL									
17...	0	0	0	0	0	0	30	20	6
SEP									
12...	--	--	0	--	--	0	--	--	9

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)
NOV , 1978											
28...	1245	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR , 1979											
21...	1100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY											
15...	1230	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG											
15...	0745	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

DATE	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)
NOV , 1978										
28...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR , 1979										
21...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY										
15...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AUG										
15...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

WATER QUALITY DATA

DATE	TIME	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
OCT , 1978						
25...	1030	.472	.630	1.00	.310	42
JAN , 1979						
18...	0930	4.49	4.80	1.63	.900	34
JUN						
21...	1000	1.26	1.42	.810	.310	37
JUL						
17...	0730	2.60	2.68	.640	.090	26

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	NOV 28,78	MAR 21,79	MAY 15,79	JUN 21,79
TIME	1245	1100	1230	1000
TOTAL CELLS/ML	54	25	1800	610
DIVERSITY: DIVISION	0.6	0.7	1.0	0.4
.CLASS	0.6	0.7	1.0	0.4
..ORDER	1.1	1.4	1.1	0.5
...FAMILY	1.1	1.9	1.1	0.5
....GENUS	1.8	1.9	1.1	0.5

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...OOCYSTACEAE								
....ANKISTRODESMUS	--	-	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	5#	20	--	-	26	4
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	23#	43	5#	20	--	-	--	-
....MELOSIRA	15#	29	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	390#	22	550#	91
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	5#	20	13	1	13	2
...CYMBELLACEAE								
....CYMBELLA	--	-	10#	40	--	-	--	-
...DIATOMACEAE								
....DIATOMA	--	-	--	-	--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	--	-	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-	--	-
....HANNAEA	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE								
....GOMPHONEMA	--	-	--	-	--	-	--	-
...NAVICULACEAE								
....NAVICULA	8	14	--	-	--	-	--	-
...NITZSCHIACEAE								
....NITZSCHIA	--	-	--	-	13	1	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
.CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
....CHROOMONAS	--	-	--	-	--	-	13	2
...CRYPTOMONADACEAE								
....CRYPTOMONAS	--	-	--	-	90	5	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....ANACYSTIS	8	14	--	-	--	-	--	-
..HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	1300#	72	--	-

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

12045500 ELWHA RIVER AT MCDONALD BRIDGE, NEAR PORT ANGELES, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE TIME	JUL 17,79 0730		AUG 15,79 0745		SEP 12,79 0900	
TOTAL CELLS/ML	580		39		61	
DIVERSITY: DIVISION	0.2		0.0		0.4	
.CLASS	0.2		0.0		0.4	
..ORDER	1.2		0.0		1.2	
...FAMILY	1.5		0.0		1.6	
....GENUS	2.2		0.0		1.6	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...OOCYSTACEAE						
....ANKISTRODESMUS	20	4	--	-	5	8
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	--	-	--	-
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	260#	46	--	-	40#	67
....MELOSIRA	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	5	1	--	-	--	-
....COCCONEIS	--	-	--	-	--	-
...CYMBELLACEAE						
....CYMBELLA	--	-	--	-	--	-
...DIATOMACEAE						
....DIATOMA	15	3	--	-	5	8
...FRAGILARIACEAE						
....ASTERIONELLA	56	10	--	-	--	-
....FRAGILARIA	25	4	--	-	--	-
....HANNAEA	25	4	--	-	--	-
....SYNEDRA	160#	28	--	-	--	-
...GOMPHONEMATACEAE						
....GOMPHONEMA	5	1	--	-	--	-
...NAVICULACEAE						
....NAVICULA	--	-	--	-	5	8
...NITZSCHIACEAE						
....NITZSCHIA	--	-	39#	100	5	8
CRYPTOPHYTA (CRYPTOMONADS)						
.CRYPTOPHYCEAE						
..CRYPTOMONADALES						
...CRYPTOCHRYSIDACEAE						
....CHROOMONAS	--	-	--	-	--	-
...CRYPTOMONADACEAE						
....CRYPTOMONAS	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....ANACYSTIS	--	-	--	-	--	-
..HORMOGONALES						
...OSCILLATORIACEAE						
....OSCILLATORIA	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

12048000 DUNGENESS RIVER NEAR SEQUIM, WA

LOCATION.--Lat 48°00'52", long 123°07'53", in NW¼NE¼ sec.13, T.29 N., R.4 W., Clallam County, Hydrologic Unit 17110020, on right bank 1.0 mi (1.6 km) upstream from Canyon Creek, 4.8 mi (7.7 km) southwest of Sequim, and at mile 11.8 (19.0 km).

DRAINAGE AREA.--156 mi² (404 km²).

PERIOD OF RECORD.--June 1923 to September 1930, June 1937 to current year. July 1897 to July 1898 at site below Canyon Creek, published as "near Sequim", records not equivalent.

REVISED RECORDS.--WSP 1316: 1924-25(M), 1927(M). WSP 1932: 1957, 1958-59(M), 1960.

GAGE.--Water-stage recorder. Datum of gage is 569.3 ft (173.52 m) National Geodetic Vertical Datum of 1929 (river-profile survey). June 8, 1923, to Sept. 30, 1930, nonrecording gage just above fish-hatchery diversion 0.5 mi (0.8 km) downstream at different datum. June 19 to Aug. 12, 1937, nonrecording gage at present site and datum.

REMARKS.--Records good except those for period Jan. 2 to Feb. 12, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--49 years (water years 1924-30, 1938-79), 387 ft³/s (10.96 m³/s), 33.69 in/yr (856 mm/yr), 280,400 acre-ft/yr (346 hm³/yr).

• EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,820 ft³/s (193 m³/s) Nov. 27, 1949, gage height, 8.58 ft (2.615 m) from floodmarks, from rating extended above 2,000 ft³/s (56.6 m³/s) on basis of slope-area measurement of peak flow; minimum discharge, 65 ft³/s (1.84 m³/s) Jan. 31 to Feb. 3, 1979, during period of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s (48.1 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0200	*1,460	41.3	*5.08	1.548

Minimum discharge, 65 ft³/s (1.84 m³/s) Jan. 31 to Feb. 3, during period of ice effect.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	203	113	247	81	65	230	177	381	465	385	211	141
2	193	113	201	78	65	196	177	393	591	304	201	217
3	185	165	185	76	65	177	172	432	701	275	193	268
4	183	708	203	74	66	301	172	522	708	288	188	222
5	175	304	180	72	67	772	185	555	687	314	180	211
6	170	239	162	70	76	990	196	500	621	311	175	185
7	167	262	146	69	115	889	196	427	475	304	167	167
8	165	325	150	68	97	621	198	381	436	423	165	265
9	165	250	143	67	120	465	201	332	470	409	162	346
10	170	201	141	93	120	393	196	318	538	505	162	253
11	162	175	196	90	115	377	193	304	603	405	165	203
12	155	172	167	78	150	373	225	318	567	332	162	177
13	153	162	153	72	354	335	272	369	465	297	162	165
14	148	155	157	71	248	328	247	423	405	288	172	160
15	143	155	148	70	193	358	239	480	369	288	180	157
16	143	167	143	68	165	346	245	522	339	301	167	150
17	143	162	141	67	170	311	242	527	325	321	162	141
18	139	157	134	67	245	284	230	533	325	328	162	137
19	137	150	126	67	196	265	211	538	369	318	160	134
20	137	143	128	78	165	256	201	533	354	314	150	134
21	134	139	124	97	150	250	190	585	332	301	150	130
22	130	137	121	82	137	245	190	673	328	268	150	124
23	128	134	119	81	128	242	198	795	339	250	146	119
24	146	134	117	77	126	247	206	694	373	242	143	115
25	132	143	107	74	585	250	209	680	409	236	139	111
26	126	139	107	73	505	239	236	825	436	239	134	111
27	124	137	100	73	314	228	275	729	445	230	150	111
28	121	209	98	72	272	209	332	549	418	230	134	117
29	121	180	95	66	---	198	335	450	409	211	134	107
30	117	193	88	66	---	188	365	401	389	201	132	106
31	113	---	84	65	---	180	---	409	---	209	130	---
TOTAL	4628	5823	4411	2302	5074	10743	6711	15578	13691	9327	4988	4984
MEAN	149	194	142	74.3	181	347	224	503	456	301	161	166
MAX	203	708	247	97	585	990	365	825	708	505	211	346
MIN	113	113	84	65	65	177	172	304	325	201	130	106
CFSM	.96	1.24	.91	.48	1.16	2.22	1.44	3.22	2.92	1.93	1.03	1.06
IN.	1.10	1.39	1.05	.55	1.21	2.56	1.60	3.71	3.26	2.22	1.19	1.19
AC-FT	9180	11550	8750	4570	10060	21310	13310	30900	27160	18500	9890	9890

CAL YR 1978 TOTAL 117618 MEAN 322 MAX 1120 MIN 84 CFSM 2.06 IN 28.05 AC-FT 233300
WTR YR 1979 TOTAL 88260 MEAN 242 MAX 990 MIN 65 CFSM 1.55 IN 21.05 AC-FT 175100

12054000 DUCKABUSH RIVER NEAR BRINNON, WA

LOCATION.--Lat 47°41'03", long 123°00'37", in NW¼SW¼ sec.1, T.25 N., R.3 W., Jefferson County, Hydrologic Unit 17110018, Olympic National Forest, on left bank 5.2 mi (8.4 km) west of Brinnon and at mile 4.5 (7.2 km).

DRAINAGE AREA.--66.5 mi² (172 km²).

PERIOD OF RECORD.--August to December 1910 (gage heights only), December 1910 to December 1911, June 1938 to current year. Published as "near Duckabush" water years 1910-11. Chemical analyses April 1972 to September 1974.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 241.49 ft (73.61 m) National Geodetic Vertical Datum of 1929. Aug. 19, 1910, to Dec. 31, 1911, nonrecording gage at same site at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--41 years (water years 1939-79), 414 ft³/s (11.72 m³/s) 84.54 in/y. (2,147 mm/yr), 299,900 acre-ft/yr (370 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,960 ft³/s (254 m³/s) Nov. 26, 1949, gage height, 10.06 ft (3.066 m), from rating curve extended above 4,800 ft³/s (136 m³/s) on basis of slope-area measurement of peak flow; minimum, 45 ft³/s (1.27 m³/s) Oct. 26, 28, 29, 1942; minimum gage height, 1.32 ft (0.402 m) Sept. 30, 1939.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (70.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 4	2300	*2,160	61.2	*5.12	1.561

Minimum discharge, 74 ft³/s (2.10 m³/s) Aug. 31, Sept. 1, gage height, 1.56 ft (0.475 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	224	100	205	115	94	317	195	496	400	303	127	101
2	210	110	185	115	92	266	187	472	520	245	121	266
3	200	760	182	115	92	245	180	480	595	215	117	540
4	192	950	210	113	94	886	175	610	560	212	113	338
5	185	350	185	107	111	1580	187	1300	510	218	109	515
6	175	230	167	103	190	1530	207	788	476	210	105	299
7	170	300	157	103	306	1190	212	575	376	205	101	212
8	165	331	151	103	242	752	212	452	348	380	100	500
9	161	236	147	100	432	565	212	396	380	299	98	600
10	165	197	161	113	341	460	202	366	432	505	98	341
11	165	175	306	119	306	452	192	348	452	400	96	251
12	155	161	242	113	570	448	254	359	412	317	94	205
13	150	151	205	107	1250	412	369	396	355	263	94	177
14	145	145	210	103	635	408	296	460	317	236	98	161
15	140	143	197	101	428	468	254	525	303	224	98	149
16	135	221	185	98	348	448	236	540	289	227	92	139
17	135	251	200	96	376	380	233	505	285	230	91	129
18	130	210	185	94	472	341	215	484	285	224	92	123
19	130	197	167	92	348	310	200	488	313	215	94	117
20	125	177	161	131	278	292	190	510	296	210	89	113
21	120	165	155	212	239	292	182	575	269	195	91	109
22	115	157	165	172	210	285	185	615	260	177	98	103
23	115	151	163	153	195	289	205	662	266	167	87	100
24	125	147	177	141	215	303	221	585	278	161	89	96
25	115	147	167	131	1030	310	245	580	310	155	82	92
26	110	143	157	123	818	285	278	668	327	151	81	91
27	105	141	149	119	515	263	359	575	324	147	82	89
28	110	190	139	113	388	245	460	420	299	143	82	92
29	120	170	117	109	---	227	468	359	289	133	79	85
30	110	205	119	100	---	215	480	327	289	127	77	84
31	105	---	119	94	---	202	---	345	---	129	76	---
TOTAL	4507	7011	5435	3608	10615	14666	7491	16261	10815	7023	2951	6217
MEAN	145	234	175	116	379	473	250	525	361	227	95.2	207
MAX	224	950	306	212	1250	1580	480	1300	595	505	127	600
MIN	105	100	117	92	92	202	175	327	260	127	76	84
CFSM	2.18	3.52	2.63	1.74	5.70	7.11	3.76	7.90	5.43	3.41	1.43	3.11
IN.	2.52	3.92	3.04	2.02	5.94	8.20	4.19	9.10	6.05	3.93	1.65	3.48
AC-FT	8940	13910	10780	7160	21050	29090	14860	32250	21450	13930	5850	12330

CAL YR 1978 TOTAL 140071 MEAN 384 MAX 3200 MIN 100 CFSM 5.77 IN 78.35 AC-FT 277800
WTR YR 1979 TOTAL 96600 MEAN 265 MAX 1580 MIN 76 CFSM 3.99 IN 54.04 AC-FT 191600

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WA

LOCATION.--Lat 47°30'52", long 123°19'43", in NW¼ sec.4, T.23 N., R.5 W., Mason County, Hydrologic Unit 17110017, Olympic National Park, on left bank 1.2 mi (1.9 km) upstream from Lake Cushman, 2.8 mi (4.5 km) upstream from Dry Creek, 11.3 mi (18.2 km) northwest of Hoodsport, and at mile 29.2 (47.0 km).

DRAINAGE AREA.--57.2 mi² (148 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1924 to current year.

REVISED RECORDS.--WSP 1286: 1932, 1935, 1937(M), 1942(M), 1947(P), 1948(M), WSP 1636: 1940(M). WSP 1736: 1927. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 762.26 ft (232.34 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 1, 1934, water-stage recorder, and Nov. 1, 1934, to Nov. 10, 1941, nonrecording gages, on right bank at same datum.

REMARKS.--Water-discharge records good. No regulation or diversion above station. Tacoma City Light radio telemeter at station.

AVERAGE DISCHARGE.--55 years, 503 ft³/s (14.24 m³/s) 119.42 in/yr (3,033 mm/yr), 364,400 acre-ft/yr (449 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft³/s (765 m³/s) Nov. 5, 1934, gage height, 14.4 ft (4.39 m), from high-water mark, from rating curve extended above 9,800 ft³/s (278 m³/s) on basis of slope-area measurement at gage height 12.2 ft (3.72 m); minimum recorded, 16 ft³/s (0.453 m³/s) Sept. 23, 1930, gage height, 1.12 ft (0.341 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,200 ft³/s (90.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 3	2315	*4,010	114	*6.23	1.899	Mar. 4	2045	3,860	109	6.14	1.871

Minimum discharge, 72 ft³/s (2.04 m³/s) Aug. 31, Sept. 1; gage height, 1.56 ft (0.475 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	278	110	285	143	115	379	288	610	525	306	133	128
2	261	126	245	143	110	327	275	570	634	245	128	350
3	248	694	285	140	108	317	264	590	658	217	123	832
4	235	1060	302	135	110	1880	271	825	585	214	119	605
5	223	370	245	128	177	2320	299	1540	550	211	115	874
6	214	285	220	123	379	1870	324	1160	490	205	113	400
7	205	374	199	119	441	1530	317	881	409	202	108	288
8	199	422	191	117	460	1010	324	694	391	505	106	972
9	193	288	191	117	839	790	309	600	422	306	104	825
10	202	242	245	155	515	682	288	545	465	784	104	480
11	196	214	515	145	460	688	271	510	460	600	102	354
12	179	199	339	131	867	670	370	515	413	427	100	292
13	171	182	278	123	1680	616	646	560	366	324	98	255
14	166	171	339	119	832	605	480	622	335	281	102	226
15	161	171	288	115	560	736	383	664	313	264	100	205
16	155	302	268	110	451	658	339	646	313	255	96	188
17	150	327	264	110	409	570	313	600	309	248	95	174
18	148	268	239	106	455	505	288	590	302	239	100	163
19	143	242	217	108	383	460	271	590	313	229	108	155
20	138	217	202	278	331	451	258	622	295	220	93	148
21	133	202	196	327	299	455	258	670	271	205	104	140
22	128	191	229	232	271	451	275	718	264	188	104	133
23	128	182	220	199	251	465	309	724	268	179	91	128
24	143	177	285	179	271	490	335	652	278	171	87	121
25	126	179	239	163	1110	480	370	664	299	166	82	117
26	119	171	217	153	951	436	422	724	309	161	80	113
27	117	188	202	143	628	396	530	605	302	158	82	113
28	119	245	179	135	470	366	616	485	281	150	79	115
29	138	217	158	128	---	343	600	427	268	140	77	106
30	121	306	150	121	---	320	605	400	281	138	76	102
31	115	---	145	117	---	302	---	436	---	138	74	---
TOTAL	5252	8322	7577	4562	13933	21568	10898	20439	11369	8076	3083	9102
MEAN	169	277	244	147	498	696	363	659	379	261	99.5	303
MAX	278	1060	515	327	1680	2320	646	1540	658	784	133	972
MIN	115	110	145	106	108	302	258	400	264	138	74	102
CFSM	2.96	4.84	4.27	2.57	8.71	12.2	6.35	11.5	6.63	4.56	1.74	5.30
IN.	3.42	5.41	4.93	2.97	9.06	14.03	7.09	13.29	7.39	5.25	2.00	5.92
AC-FT	10420	16510	15030	9050	27640	42780	21620	40540	22550	16020	6120	18050

CAL YR 1978 TOTAL 166308 MEAN 456 MAX 3450 MIN 100 CFSM 7.97 IN 108.16 AC-FT 329900
WTR YR 1979 TOTAL 124181 MEAN 340 MAX 2320 MIN 74 CFSM 5.94 IN 80.76 AC-FT 246300

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS NEAR HOODSPORT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: April 1965 to current year.

INSTRUMENTATION.--Temperature recorder since April 1965.

REMARKS.--Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 15.0°C Aug. 12, 13, 15-17, 1977, Aug. 9, 1978; minimum (1965-67, 1968-79), 0.0°C Mar. 24, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 14.0°C July 20, Aug. 2; minimum, 0.5°C Dec. 31, Jan. 1.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978								
19...	1230	143	90	7.7	8.5	.00	11.5	1
NOV								
09...	1300	281	75	7.6	5.6	.00	12.4	<1
DEC								
07...	1155	199	80	7.5	2.4	.00	12.4	<1
JAN , 1979								
09...	1225	115	98	6.8	2.7	.00	13.3	<1
FEB								
08...	1200	324	83	7.6	2.9	1.0	13.2	2
MAR								
08...	1230	1000	68	7.7	4.2	1.0	13.4	<1
APR								
09...	1245	306	87	7.4	5.1	.00	12.4	<1
MAY								
10...	1145	540	77	7.2	5.6	.00	12.4	2
JUN								
07...	1305	400	75	--	7.8	.00	12.0	1
JUL								
12...	1005	427	68	7.4	8.6	1.0	11.5	15
AUG								
09...	1015	106	91	7.2	11.0	.00	10.8	5
SEP								
13...	1000	255	85	7.9	9.2	.00	11.1	8

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
OCT , 1978								
19...	.01	.00	.23	.23	.24	1.1	.000	.01
NOV								
09...	.05	.01	.19	.20	.25	1.1	.000	.02
DEC								
07...	.04	.01	.16	.17	.21	.93	.020	.00
JAN , 1979								
09...	.03	.00	.00	.00	.03	.13	.000	.00
FEB								
08...	.06	.01	.02	.03	.09	.40	.000	.00
MAR								
08...	.05	.01	.09	.10	.15	.66	.010	.00
APR								
09...	.03	.00	.04	.04	.07	.31	.000	.00
MAY								
10...	.04	.01	.00	.00	.04	.18	.000	.00
JUN								
07...	.02	.04	.00	.02	.04	.18	.010	.00
JUL								
12...	.05	.01	.00	.00	.05	.22	.010	.01
AUG								
09...	.05	.01	.00	.00	.05	.22	.010	.00
SEP								
13...	.05	.03	.47	.50	.55	2.4	.000	.01

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS NEAR HOODSPORT, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	9.0	8.0	8.5	6.5	6.0	6.0	4.5	4.5	4.5	1.0	.5	1.0
2	8.5	8.0	8.5	6.5	6.0	6.5	4.5	4.5	4.5	2.0	1.0	1.5
3	9.0	8.0	8.5	8.0	6.5	7.0	5.0	4.5	5.0	2.0	2.0	2.0
4	8.5	8.0	8.5	8.0	6.0	6.5	5.0	4.0	4.5	2.0	1.5	2.0
5	8.5	7.5	8.0	6.0	5.5	6.0	4.0	3.5	4.0	1.5	1.0	1.0
6	8.5	7.5	8.0	6.5	6.0	6.5	3.5	3.0	3.0	1.0	1.0	1.0
7	9.0	8.0	8.5	8.0	6.5	7.5	3.0	2.5	2.5	1.5	1.0	1.0
8	9.5	8.5	9.0	8.0	6.0	7.0	3.0	2.5	3.0	2.0	1.5	2.0
9	9.0	8.5	9.0	5.5	4.5	5.0	3.5	3.0	3.0	2.5	2.0	2.5
10	9.0	8.5	9.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5	2.5	2.5
11	8.5	8.0	8.0	4.0	3.5	3.5	3.5	3.0	3.5	3.0	2.5	2.5
12	8.0	7.0	7.5	3.5	3.5	3.5	3.5	3.0	3.5	3.0	3.0	3.0
13	7.5	7.0	7.5	3.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
14	8.0	7.5	7.5	3.5	3.0	3.0	3.5	3.5	3.5	3.0	2.5	3.0
15	8.5	7.5	8.0	3.5	2.5	3.0	3.5	3.0	3.5	3.0	3.0	3.0
16	9.0	8.5	8.5	3.5	2.5	3.0	3.5	2.0	3.0	3.5	3.0	3.0
17	9.5	8.5	9.0	4.0	3.5	4.0	2.5	2.0	2.5	3.0	3.0	3.0
18	9.0	8.0	8.5	4.5	4.0	4.0	3.0	2.5	3.0	3.0	2.5	2.5
19	9.0	8.0	8.5	4.0	3.5	4.0	3.0	2.5	2.5	3.5	2.5	3.0
20	9.0	8.0	8.5	4.0	3.5	3.5	3.5	3.0	3.0	3.5	2.5	3.0
21	8.0	7.0	7.5	3.5	3.5	3.5	3.5	3.5	3.5	3.0	2.5	3.0
22	8.0	7.0	7.5	3.5	3.0	3.5	3.5	3.5	3.5	3.0	2.5	3.0
23	8.5	7.5	8.0	4.0	3.5	3.5	4.0	3.5	3.5	3.0	3.0	3.0
24	8.5	7.5	8.0	4.5	4.0	4.0	4.0	3.5	3.5	3.0	3.0	3.0
25	7.0	6.5	7.0	4.5	4.0	4.5	3.5	3.0	3.0	3.0	2.5	2.5
26	7.0	6.0	6.5	4.5	4.0	4.5	3.0	2.5	2.5	2.5	2.5	2.5
27	7.5	7.0	7.5	4.0	4.0	4.0	3.0	2.5	3.0	2.5	2.5	2.5
28	8.0	7.5	7.5	4.5	4.0	4.0	2.5	1.0	1.5	2.5	2.0	2.0
29	7.5	6.5	7.0	4.5	4.5	4.5	1.0	1.0	1.0	2.5	1.5	2.0
30	6.5	6.0	6.5	4.5	4.5	4.5	1.0	1.0	1.0	1.5	1.0	1.5
31	6.0	5.5	6.0	---	---	---	1.0	.5	1.0	1.0	1.0	1.0
MONTH	9.5	5.5	8.0	8.0	2.5	4.5	5.0	.5	3.0	3.5	.5	2.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.5	1.0	1.0	3.5	3.0	3.5	4.5	3.5	4.0	5.5	5.0	5.5
2	1.5	1.0	1.5	4.0	3.5	4.0	5.0	4.0	4.5	7.0	5.0	6.0
3	2.0	1.5	2.0	4.0	4.0	4.0	5.0	4.0	4.5	6.5	5.0	6.0
4	3.0	2.0	2.5	4.0	2.0	3.0	6.0	4.5	5.0	6.0	5.5	5.5
5	3.0	2.5	2.5	3.5	2.5	3.0	6.0	4.0	5.0	5.5	4.5	5.0
6	3.0	2.0	2.5	4.0	3.5	4.0	5.5	4.5	5.0	4.5	4.5	4.5
7	3.0	2.5	3.0	4.0	3.5	4.0	5.0	4.0	4.5	6.0	4.5	5.0
8	3.0	2.5	3.0	4.0	3.5	4.0	5.0	4.5	4.5	6.5	5.0	5.5
9	3.5	3.0	3.5	4.0	3.5	4.0	5.0	4.0	4.5	7.0	5.0	6.0
10	3.5	3.5	3.5	4.5	3.5	4.0	4.5	3.5	4.0	6.5	5.0	5.5
11	3.5	3.5	3.5	4.5	4.0	4.5	5.0	3.5	4.0	7.0	5.0	6.0
12	3.5	3.5	3.5	4.5	4.0	4.0	4.5	3.5	4.0	7.0	5.5	6.0
13	3.5	3.5	3.5	4.5	3.5	4.0	4.5	3.5	4.0	8.0	5.5	6.5
14	3.5	3.0	3.0	4.5	4.0	4.0	5.0	3.5	4.0	7.5	5.5	6.5
15	3.5	3.0	3.0	4.5	4.0	4.5	5.0	4.0	4.5	7.5	5.5	6.5
16	3.0	2.5	2.5	4.5	3.5	4.0	5.0	4.0	4.5	7.0	5.5	6.5
17	2.5	1.0	1.5	4.5	4.0	4.0	5.0	4.0	4.5	7.5	5.5	6.5
18	3.0	2.0	2.5	5.0	4.0	4.5	5.5	4.0	5.0	7.5	5.5	6.5
19	3.5	2.5	3.0	4.5	3.5	4.0	5.5	4.0	4.5	8.0	5.5	6.5
20	3.5	3.0	3.0	5.0	4.0	4.5	6.0	4.5	5.0	8.0	5.5	7.0
21	4.0	3.5	3.5	5.0	4.0	4.5	6.0	4.0	5.0	8.5	5.5	7.0
22	3.5	3.5	3.5	5.0	4.0	4.5	6.5	4.5	5.5	8.0	6.0	7.0
23	3.5	3.0	3.5	5.0	4.0	4.5	6.0	4.5	5.0	7.0	6.0	6.5
24	3.0	2.0	2.0	5.0	4.0	4.5	6.5	4.5	5.5	8.0	6.0	7.0
25	3.0	2.0	2.5	4.5	4.0	4.0	6.5	4.5	5.5	9.0	6.0	7.5
26	4.0	3.0	3.5	4.5	4.0	4.5	6.5	4.5	5.5	8.0	6.0	7.0
27	3.5	2.0	3.0	5.0	4.0	4.5	7.0	4.5	5.5	6.5	5.0	5.5
28	4.0	3.5	3.5	5.0	4.0	4.5	6.0	5.0	5.5	6.5	5.0	6.0
29	---	---	---	5.0	4.0	4.5	6.5	5.0	5.5	6.5	5.0	6.0
30	---	---	---	4.5	4.0	4.5	6.5	5.0	5.5	8.0	5.5	6.5
31	---	---	---	5.0	4.0	4.5	---	---	---	9.0	6.0	7.5
MONTH	4.0	1.0	3.0	5.0	2.0	4.0	7.0	3.5	5.0	9.0	4.5	6.0

12056500 NORTH FORK SKOKOMISH RIVER BELOW STAIRCASE RAPIDS NEAR HOODSPORT, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.0	6.5	8.0	9.0	8.0	8.0	13.0	11.5	12.0	12.0	11.5	11.5
2	9.5	7.0	8.0	8.5	7.0	8.0	14.0	11.5	12.5	11.5	11.0	11.5
3	9.0	7.0	8.0	10.0	7.5	8.5	13.5	11.5	12.0	11.0	10.5	10.5
4	8.0	7.0	7.5	10.0	8.5	9.0	13.5	10.5	11.5	10.5	10.0	10.5
5	9.0	7.0	8.0	10.0	8.5	9.5	13.0	11.0	11.5	11.0	10.0	10.5
6	8.0	6.0	7.0	10.0	8.5	9.0	13.0	10.5	11.5	10.5	10.0	10.5
7	8.0	6.0	7.0	9.5	9.0	9.5	13.0	10.5	11.5	11.0	10.5	10.5
8	9.0	6.5	7.5	10.0	9.0	9.5	13.0	10.5	11.5	11.0	10.0	10.5
9	9.5	7.0	8.5	11.0	9.0	10.0	13.5	10.5	12.0	10.5	9.5	10.0
10	9.5	7.5	8.5	10.0	9.0	9.5	13.5	11.0	12.0	10.0	9.0	10.0
11	9.0	7.5	8.5	9.5	8.5	9.0	13.5	11.0	12.0	10.0	9.0	9.5
12	9.0	7.5	8.0	9.5	8.5	9.0	13.5	11.0	12.0	10.5	9.0	9.5
13	8.0	6.5	7.5	9.5	8.0	9.0	12.5	11.0	11.5	11.0	9.5	10.0
14	8.0	6.5	7.0	11.0	8.5	9.5	11.5	11.0	11.5	11.0	9.5	10.5
15	8.0	6.5	7.5	11.5	9.0	10.5	13.0	11.0	12.0	11.0	10.0	10.5
16	8.0	7.0	7.5	12.5	9.5	11.0	13.0	11.5	12.0	11.5	10.5	11.0
17	8.0	7.0	7.5	13.0	10.5	11.5	13.0	11.5	12.0	11.0	10.0	10.5
18	10.0	7.5	8.5	13.0	11.0	12.0	11.5	11.0	11.5	11.0	10.0	10.5
19	9.0	7.5	8.5	13.5	11.0	12.5	12.0	11.0	11.5	11.5	10.5	11.0
20	8.5	7.5	8.0	14.0	11.5	12.5	12.5	11.0	11.5	11.5	10.5	11.0
21	9.0	7.5	8.0	12.5	11.5	12.0	11.5	11.0	11.5	11.5	10.5	11.0
22	9.5	7.5	8.5	13.0	10.5	12.0	13.0	11.0	11.5	11.5	10.5	10.5
23	10.0	7.5	9.0	13.0	11.0	12.0	12.0	11.0	11.5	11.0	10.0	10.5
24	10.5	9.0	9.0	13.0	10.5	12.0	13.0	10.5	11.5	10.5	9.5	10.0
25	11.0	8.5	9.5	13.0	11.0	12.0	13.5	11.0	11.5	11.0	9.5	10.5
26	11.5	8.5	10.0	13.5	11.0	12.0	13.5	11.0	12.0	11.0	10.0	10.5
27	11.0	9.0	10.0	13.0	11.5	12.0	12.0	11.5	11.5	11.0	10.0	10.5
28	11.0	8.5	10.0	13.0	11.0	12.0	13.0	11.5	12.0	10.5	9.5	10.0
29	10.0	9.0	9.5	13.0	10.5	11.5	13.0	11.0	12.0	10.0	9.0	9.5
30	10.0	8.5	9.0	13.5	11.0	12.0	12.0	11.5	11.5	10.5	9.0	9.5
31	---	---	---	13.0	11.0	12.0	12.0	11.0	11.5	---	---	---
MONTH	11.5	6.0	8.5	14.0	7.0	10.5	14.0	10.5	11.5	12.0	9.0	10.5
YEAR	14.0	.5	6.5									

12057000 LAKE CUSHMAN RESERVOIR NEAR HOODSPORT, WA

LOCATION.--Lat 47°25'25", long 123°13'20", in NE¼SW¼ sec.5, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110017, on upstream face of Cushman Dam No. 1, 4 mi (6.4 km) northwest of Hoodsport.

DRAINAGE AREA.--93.7 mi² (242.7 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978								
19...	1050	1.0	56	7.2	14.6	.00	9.9	<1
19...	1055	20	56	7.3	14.3	.00	9.9	<1
19...	1105	50	56	7.3	14.0	.00	9.5	<1
19...	1110	100	57	6.8	9.0	.00	9.2	<1
19...	1120	215	57	6.2	5.8	.00	7.1	<1
NOV								
09...	1120	1.0	58	7.6	11.8	.00	10.0	<1
09...	1130	20	59	7.6	11.8	.00	10.0	<1
09...	1140	50	60	7.5	11.8	.00	9.7	<1
09...	1145	100	61	7.2	9.9	.00	9.0	<1
09...	1155	200	63	6.8	5.6	1.0	5.8	<1
DEC								
07...	1030	1.0	60	7.0	8.2	.00	10.2	<1
07...	1035	20	59	7.0	8.3	.00	10.1	<1
07...	1045	50	60	6.9	8.3	.00	10.1	<1
07...	1050	100	60	6.9	8.3	.00	10.1	<1
07...	1055	190	59	6.6	5.6	.00	6.8	1
JAN , 1979								
09...	1040	1.0	59	6.8	5.0	.00	11.0	<1
09...	1045	20	60	7.0	5.0	.00	10.9	<1
09...	1050	50	60	6.9	5.0	.00	10.8	1
09...	1055	100	60	6.9	5.0	1.0	10.9	<1
09...	1105	175	60	6.9	5.0	.00	10.9	<1
FEB								
08...	1030	1.0	65	7.4	4.3	1.0	11.2	<1
08...	1035	20	65	7.4	4.2	.00	11.3	<1
08...	1040	50	65	7.4	4.2	.00	11.2	<1
08...	1045	100	64	7.4	4.2	.00	11.1	<1
08...	1050	160	65	7.4	4.2	.00	11.1	<1
MAR								
08...	0950	1.0	65	7.5	4.4	1.0	12.5	<1
08...	1000	20	66	7.6	4.4	1.0	12.4	<1
08...	1005	50	64	7.6	4.2	1.0	12.4	<1
08...	1015	100	64	7.6	4.1	1.0	12.3	<1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
OCT , 1978								
19...	.00	.00	.85	.85	.85	3.8	.000	.01
19...	.00	.00	.35	.35	.35	1.6	.000	.00
19...	.00	.00	.42	.42	.42	1.9	.000	.00
19...	.01	.00	.35	.35	.36	1.6	.000	.00
19...	.05	.00	.35	.35	.40	1.8	.000	.01
NOV								
09...	.01	.01	.20	.21	.22	.97	.000	.02
09...	.00	.01	.16	.17	.17	.75	.000	.02
09...	.01	.01	.19	.20	.21	.93	.000	.02
09...	.01	.01	.23	.24	.25	1.1	.000	.01
09...	.06	.01	.18	.19	.25	1.1	.000	.02
DEC								
07...	.01	.01	.22	.23	.24	1.1	.020	.00
07...	.01	.01	.18	.19	.20	.90	.010	.02
07...	.01	.01	.25	.26	.27	1.2	.030	.02
07...	.01	.01	.25	.26	.27	1.2	.010	.01
07...	.05	.01	.09	.10	.15	.70	.010	.02
JAN , 1979								
09...	.01	.00	.00	.00	.01	.04	.000	.00
09...	.02	.01	.09	.10	.12	.53	.000	.00
09...	.01	.00	.04	.04	.05	.22	.010	.00
09...	.02	.00	.13	.13	.15	.66	.010	.00
09...	.02	.00	.11	.11	.13	.58	.000	.00
FEB								
08...	.02	.01	.04	.05	.07	.31	.000	.00
08...	.02	.00	.05	.06	.08	.35	.000	.00
08...	.02	.00	.11	.11	.13	.58	.000	.00
08...	.02	.01	.05	.06	.08	.35	.000	.00
08...	.04	.00	.04	.04	.08	.35	.000	.00
MAR								
08...	.02	.00	.08	.08	.10	.44	.000	.00
08...	.02	.01	--	--	--	--	.000	.00
08...	.02	.00	.03	.03	.05	.22	.000	.00
08...	.02	.00	.09	.09	.11	.49	.000	.00

12057000 LAKE CUSHMAN RESERVOIR NEAR HOODSPORT, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMP-LING DEPTH (FT)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
MAR , 1979								
08...	1020	155	65	7.6	4.0	1.0	12.3	<1
APR								
09...	1040	1.0	64	7.6	7.0	.00	12.3	<1
09...	1050	20	63	7.7	6.7	.00	12.3	<1
09...	1100	50	64	7.7	6.2	.00	12.0	<1
09...	1105	100	65	7.5	5.8	1.0	11.9	<1
09...	1110	190	65	7.5	4.8	.00	11.4	<1
MAY								
10...	0955	1.0	61	7.6	11.2	.00	12.1	<1
10...	1000	20	63	7.8	10.0	1.0	11.5	1
10...	1005	50	64	7.8	7.4	1.0	12.1	<1
10...	1015	100	64	7.7	5.7	.00	11.6	<1
10...	1020	225	65	7.5	4.4	1.0	10.7	<1
JUN								
07...	1050	1.0	65	7.5	16.6	.00	9.8	<1
07...	1110	20	65	7.6	16.3	.00	9.9	<1
07...	1120	50	67	7.8	8.0	.00	12.0	<1
07...	1125	100	69	7.6	5.9	.00	11.0	<1
07...	1135	230	70	7.3	4.8	1.0	10.3	<1
JUL								
12...	0950	1.0	64	7.6	17.3	.00	9.4	<1
12...	1000	20	62	7.6	17.2	.00	9.4	<1
12...	1005	50	63	7.4	12.6	.00	11.4	<1
12...	1010	100	63	7.2	6.4	.00	10.5	<1
12...	1015	225	67	7.8	4.9	1.0	9.4	<1
AUG								
09...	0935	1.0	63	7.4	20.5	.00	8.8	<1
09...	0945	20	62	7.6	20.4	.00	8.8	1
09...	0950	50	63	8.0	14.0	.00	11.8	<1
09...	1000	100	65	7.2	6.8	.00	10.2	<1
09...	1010	235	67	7.2	5.1	.00	8.6	2
SEP								
13...	0905	1.0	67	7.1	18.4	.00	9.2	<1
13...	0915	20	68	7.5	18.3	.00	9.2	1

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
MAR , 1979								
08...	.02	.00	.10	.10	.12	.53	.000	.00
APR								
09...	.00	.00	.03	.03	.03	.13	.000	.00
09...	.00	.00	.05	.05	.05	.22	.000	.00
09...	.01	.00	.04	.04	.05	.22	.010	.00
09...	.01	.01	.02	.03	.04	.18	.000	.00
09...	.02	.01	.02	.03	.05	.22	.000	.00
MAY								
10...	.01	.00	.00	.00	.01	.04	.000	.00
10...	.01	.00	.01	.01	.02	.09	.000	.00
10...	.01	.02	.00	.00	.01	.04	.000	.00
10...	.02	.01	.00	.01	.03	.13	.000	.00
10...	.05	.00	.00	.00	.05	.22	.000	.00
JUN								
07...	.00	.02	.04	.06	.06	.27	.010	.00
07...	.00	.01	.05	.06	.06	.27	.000	.00
07...	.01	.02	.08	.10	.11	.49	.010	.00
07...	.02	.01	.04	.05	.07	.31	.000	.00
07...	.04	.01	.04	.05	.09	.40	.000	.00
JUL								
12...	.05	.00	.08	.08	.13	.58	.000	.00
12...	.04	.00	.06	.06	.10	.44	.010	.00
12...	.04	.00	.06	.06	.10	.44	.000	.05
12...	.05	.00	.13	.13	.18	.80	.000	.04
12...	.08	.01	.19	.20	.28	1.2	.000	.00
AUG								
09...	.05	.01	.01	.02	.07	.31	.020	.00
09...	.03	.01	.01	.02	.05	.22	.000	.00
09...	.01	.01	.00	.00	.01	.04	.020	.00
09...	.01	.01	.04	.05	.06	.27	.020	.00
09...	.05	.00	.00	.00	.05	.22	.010	.00
SEP								
13...	.01	.01	.53	.54	.55	2.4	.000	.01
13...	.01	.11	.32	.43	.44	1.9	.000	.01

12057000 LAKE CUSHMAN RESERVOIR NEAR HOODSPORT, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
SEP , 1979								
13...	0920	50	74	7.8	14.9	.00	11.3	<1
13...	0930	100	68	7.6	7.3	.00	10.4	<1
13...	0935	185	72	7.0	5.4	.00	9.1	<1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
SEP , 1979								
13...	.00	.01	.46	.47	.47	2.1	.000	.01
13...	.00	.05	.45	.50	.50	2.2	.000	.00
13...	.05	.01	.49	.50	.55	2.4	.000	.01

SKOKOMISH RIVER BASIN

12057500 NORTH FORK SKOKOMISH RIVER NEAR HOODSPORT, WA

LOCATION.--Lat 47°25'24", long 123°13'16", in NE¼SW¼ sec.5, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110017, on Lake Cushman at city of Tacoma dam, 4 mi (6.4 km) northwest of Hoodsport.

DRAINAGE AREA.--93.7 mi^2 (242.7 km^2).

PERIOD OF RECORD.--August 1910 to September 1911 (fragmentary) and February 1913 to current year (monthly discharge only). Records of estimated monthly discharge only October 1911 to January 1913 in files of Tacoma district office.

REVISED RECORDS.--WSP 1216: Drainage area.

GAGE.--Discharge determined from record of power output and Lake Cushman elevations, plus spillway discharge when present. Prior to Sept. 23, 1911, nonrecording gage, and February 1913 to September 1923, water-stage recorder at approximately same site, at datum 486.4 ft (148.25 m) National Geodetic Vertical Datum of 1929 prior to Sept. 2, 1918, and at datum 5.00 ft (1.524 m) higher Sept. 2, 1918 to September 1923, levels by city of Tacoma. October 1923 to September 1930 water-stage recorder 1 mi (1.6 km) downstream at different datum.

REMARKS.--Records fair. No diversion of consequence. Flow regulated by Lake Cushman since October 1925 for power by city of Tacoma.

COOPERATION.--Records of power output, spill, and elevations of Lake Cushman furnished by city of Tacoma.

AVERAGE DISCHARGE.--68 years (water years 1912-79), 758 ft^3/s (21.47 m^3/s), 109.86 in/yr (2,790 mm/yr) 549,200 acre-ft/yr (677 hm^3/yr) adjusted for storage.

EXTREMES.--Not determined since regulation began in Lake Cushman.

MONTHLY DISCHARGE, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Month	Observed				Change in contents in Lake Cushman (acre-feet)	Adjusted for change in reservoir contents			
	Maximum (cfs)	Minimum (cfs)	Mean (cfs)	Runoff in acre-feet		Mean (cfs)	Per square mile	Runoff in inches	Runoff in acre-feet
October.................	2,070	141	1,086	66,800	-56,820	162	1.73	2.00	9,980
November................	2,050	0	773	46,020	-18,360	465	4.96	5.53	27,660
December................	2,000	0	1,188	73,070	-49,130	389	4.15	4.70	23,940
CAL YR 1978..........	2,510	0	766	554,300	-79,970	655	6.99	94.91	474,300
January.................	1,680	0	720	44,260	-28,220	261	2.79	3.21	16,040
February................	1,160	0	398	22,090	+42,030	1,155	12.3	12.83	64,120
March...................	541	0	104	6,380	+59,500	1,071	11.4	13.18	65,880
April...................	0	0	0	0	+29,050	488	5.21	5.81	29,050
May.....................	1,400	0	354	21,790	+27,670	804	8.58	9.90	49,460
June....................	723	0	204	12,150	+11,990	406	4.33	4.83	24,140
July....................	1,010	0	306	18,790	-920	291	3.11	3.58	17,870
August..................	603	35	290	17,860	-10,170	125	1.33	1.54	7,690
September...............	1,010	47	534	31,760	-6,420	426	4.55	5.07	25,340
WTR YR 1979........	2,070	0	499	361,000	+200	499	5.33	72.28	361,200

12058600 LOWER LAKE CUSHMAN NEAR HOODSPORT, WA

LOCATION.--Lat 47°23'52", long 123°11'57", in SE¼NW¼ sec.16, T.22 N., R.4 W., Mason County, Hydrologic Unit 17110018. Samples taken at log boom, approximately 300 ft (91 m).

DRAINAGE AREA.--99.2 mi² (256.9 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1980

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978								
19...	0925	1.0	56	--	--	.00	9.1	<1
19...	0935	20	57	--	--	.00	8.9	1
19...	0945	50	57	--	--	.00	8.8	1
19...	0955	110	57	--	--	.00	8.2	<1
NOV								
09...	0940	1.0	47	7.5	9.1	.00	9.2	<1
09...	0945	20	47	7.5	9.1	.00	9.5	<1
09...	0955	50	48	7.4	9.1	.00	8.8	--
09...	1005	110	52	7.3	7.3	.00	7.8	--
DEC								
07...	0910	1.0	60	7.0	7.5	.00	9.5	<1
07...	0920	20	61	7.0	7.6	.00	9.5	<1
07...	0925	50	61	6.9	7.6	.00	9.4	1
07...	0935	110	61	6.8	7.3	.00	9.1	<1
JAN , 1979								
09...	0910	1.0	65	7.0	5.0	.00	10.9	<1
09...	0915	20	65	6.9	5.1	1.0	10.6	<1
09...	0920	50	65	7.0	5.1	.00	10.9	<1
09...	0925	110	65	6.8	5.1	15	10.9	<1
FEB								
08...	0845	1.0	64	7.5	4.3	.00	11.3	<1
08...	0855	20	64	7.5	4.3	.00	11.3	<1
08...	0905	50	64	7.5	4.3	.00	11.1	<1
08...	0915	100	64	7.4	4.3	.00	11.3	<1
MAR								
08...	0835	1.0	55	7.6	5.9	2.0	12.5	<1
08...	0845	20	59	7.5	5.0	2.0	12.4	<1
08...	0855	50	62	7.5	4.3	1.0	12.4	<1
08...	0900	110	64	7.5	4.1	1.0	12.0	<1
APR								
09...	0900	1.0	63	7.7	9.2	.00	11.7	2
09...	0910	20	67	7.9	6.4	.00	12.9	<1
09...	0920	50	65	7.7	5.2	.00	11.7	<1
09...	0930	140	65	7.6	4.7	.00	10.6	<1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
OCT , 1978								
19...	.03	.00	.84	.84	.87	3.9	.000	.01
19...	.02	.00	.12	.12	.14	.62	.000	.01
19...	.02	.00	.81	.81	.83	3.7	.000	.01
19...	.03	.00	.71	.71	.74	3.3	.000	.01
NOV								
09...	.02	.00	.23	.23	.25	1.1	.000	.02
09...	.02	.01	.19	.20	.22	.97	.000	.02
09...	.02	.03	.16	.19	.21	.93	.000	.02
09...	.03	.01	.28	.29	.32	1.4	.000	.02
DEC								
07...	.02	.01	.08	.09	.11	.49	.010	.01
07...	.02	.01	.12	.13	.15	.70	.010	.00
07...	.02	.01	.11	.12	.14	.60	.010	.00
07...	.05	.01	.18	.19	.24	1.1	.010	.00
JAN , 1979								
09...	.02	.00	.00	.00	.02	.09	.000	.00
09...	.02	.00	.03	.03	.05	.22	.000	.00
09...	.02	.00	.00	.00	.02	.09	.000	.00
09...	.02	.00	.15	.15	.17	.75	.040	.00
FEB								
08...	.02	.00	.01	.01	.03	.13	.000	.00
08...	.02	.00	.03	.03	.05	.22	.000	.00
08...	.04	.01	.03	.04	.08	.35	.000	.00
08...	.02	.01	.02	.03	.05	.22	.000	.00
MAR								
08...	.07	.00	.10	.10	.17	.75	.000	.00
08...	.06	.00	.23	.23	.29	1.3	.000	.00
08...	.06	.00	.14	.14	.20	.89	.000	.00
08...	.05	.00	.08	.08	.13	.58	.000	.00
APR								
09...	.01	.00	.12	.12	.13	.58	.000	.00
09...	.00	.00	.07	.07	.07	.31	.000	.00
09...	.02	.00	.09	.09	.11	.49	.000	.00
09...	.05	.00	.08	.08	.13	.58	.000	.00

12058600 LOWER LAKE CUSHMAN NEAR HOODSPORT, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
MAY , 1979								
10...	0840	1.0	59	7.3	12.6	1.0	11.2	1
10...	0845	20	65	7.4	6.7	1.0	11.4	<1
10...	0850	50	65	7.5	5.4	1.0	12.0	<1
10...	0900	110	65	7.4	4.4	.00	10.1	<1
JUN								
07...	0855	1.0	65	7.3	11.6	.00	10.8	<1
07...	0910	20	67	7.3	7.1	.00	11.2	<1
07...	0915	50	68	7.4	6.4	.00	11.4	<1
07...	0925	125	69	7.4	4.5	.00	9.4	<1
JUL								
12...	1025	1.0	65	7.8	12.0	.00	10.6	<1
12...	1035	20	65	7.7	7.0	.00	10.6	2
12...	1040	50	65	7.6	6.8	.00	10.6	<1
12...	1050	140	67	7.3	4.7	.00	8.2	<1
AUG								
09...	1055	1.0	68	7.3	15.3	.00	10.3	<1
09...	1105	20	70	7.2	8.3	.00	10.3	<1
09...	1110	50	73	7.4	7.3	.00	10.1	<1
09...	1115	125	79	7.0	5.0	1.0	7.5	<1
SEP								
13...	1020	1.0	68	6.8	12.0	.00	10.2	<1
13...	1045	20	69	6.7	9.0	.00	10.1	<1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
MAY , 1979								
10...	.00	.00	.05	.05	.05	.22	.000	.00
10...	.02	.00	.14	.14	.16	.71	.000	.00
10...	.00	.00	.07	.07	.07	.31	.000	.00
10...	.06	.00	.05	.05	.11	.49	.000	.00
JUN								
07...	.02	.01	.10	.11	.13	.58	.000	.00
07...	.02	.01	.08	.09	.11	.49	.000	.00
07...	.02	.01	.05	.06	.08	.35	.000	.00
07...	.06	.01	.04	.05	.11	.49	.020	.01
JUL								
12...	.05	.01	.08	.09	.14	.62	.000	.04
12...	.05	.01	.09	.10	.15	.66	.010	.04
12...	.05	.01	.04	.05	.10	.44	.010	.03
12...	.10	.01	.06	.07	.17	.75	.000	.00
AUG								
09...	.01	.01	.01	.02	.03	.13	.010	.00
09...	.01	.00	.00	.00	.01	.04	.010	.00
09...	.01	.00	.02	.02	.03	.13	.010	.00
09...	.06	.00	.03	.03	.09	.40	.010	.00
SEP								
13...	.01	.01	.38	.39	.40	1.8	.000	.01
13...	.02	.01	.42	.43	.45	2.0	.000	.03

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°19'42", long 123°14'33", in NE¼NW¼ sec.7, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on left bank 1.1 mi (1.8 km) upstream from South Fork Skokomish River, 5.4 mi (8.7 km) southwest of Potlatch, 7.2 mi (11.6 km) downstream from city of Tacoma's Cushman Dam No. 2, and at mile 10.1 (16.3 km).

DRAINAGE AREA.--117 mi² (303 km²), includes 99 mi² (256 km²) above Cushman Dam No. 2 which is normally noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1944 to November 1949, March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 63.49 ft (19.352 m) National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to Nov. 27, 1949 (destroyed by flood of Nov. 27, 1949), and Mar. 18 to May 9, 1950, water-stage recorder at site 200 ft (61 m) downstream at present datum.

REMARKS.--Water-discharge records good except those for period of faulty gage-height record June 20 to Sept. 30 which are fair. Entire flow of river normally diverted at Cushman Dam No. 2 to supply powerplant which discharges directly into sea (Hood Canal). Main portion of McTaggart Creek is diverted through Deer Meadow Creek into Cushman Reservoir No. 2 and may bypass this station. Flow regulated by Lake Cushman (see sta 12057500) and by pondage in Cushman Reservoir No. 2, from which spill and releases are infrequent.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,740 ft³/s (219 m³/s) Nov. 4, 1955, gage height, 10.45 ft (3.185 m); minimum recorded, 1.3 ft³/s (0.037 m³/s) Sept. 5, 14, 16, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,050 ft³/s (29.7 m³/s) Mar. 4, gage height, 4.69 ft (1.430 m); minimum daily discharge 5.0 ft³/s (0.14 m³/s) Aug. 30, 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	15	54	38	35	199	43	31	21	14	7.0	7.0
2	31	17	52	38	33	162	41	30	20	13	7.0	11
3	27	38	52	37	32	146	41	31	20	12	6.5	19
4	26	115	50	36	32	525	40	33	20	11	6.5	24
5	25	52	47	35	46	670	38	50	20	11	6.5	30
6	25	40	44	33	113	388	38	49	20	10	6.5	16
7	24	37	43	32	149	265	37	52	19	10	6.0	12
8	23	38	38	32	123	196	41	47	19	13	6.0	30
9	23	35	44	32	220	159	38	43	19	13	6.0	35
10	23	32	65	50	178	132	37	40	18	15	6.0	20
11	24	31	129	40	172	115	37	38	18	17	6.0	15
12	22	29	98	37	361	108	59	37	17	16	5.5	13
13	20	27	83	36	495	98	80	35	17	15	5.5	12
14	20	26	87	36	297	91	61	35	17	14	5.5	11
15	19	32	78	35	199	89	54	33	16	13	5.5	10
16	19	70	76	33	159	83	50	31	15	12	6.0	9.0
17	18	63	87	33	269	76	47	31	16	11	6.0	8.0
18	18	61	85	32	428	72	43	30	16	11	6.0	7.5
19	18	83	78	35	281	68	41	29	15	10	6.5	7.0
20	17	68	70	57	199	66	41	27	14	10	6.0	6.5
21	17	61	66	76	159	63	38	26	14	9.5	6.5	6.5
22	17	54	68	66	132	59	37	26	13	9.0	7.0	6.0
23	17	49	65	59	121	57	37	26	13	8.5	6.5	6.0
24	17	46	61	52	189	56	36	25	13	8.5	6.0	6.0
25	16	46	54	49	706	52	35	24	13	8.0	5.5	6.0
26	15	46	52	47	535	52	33	24	12	8.0	5.5	5.5
27	15	43	50	44	361	50	33	24	12	7.5	5.5	5.5
28	16	40	47	40	261	49	32	23	12	7.5	5.5	5.5
29	17	40	44	38	---	46	31	23	12	7.5	5.5	5.5
30	15	50	40	37	---	41	31	23	12	7.0	5.0	5.5
31	15	---	38	36	---	38	---	22	---	7.0	5.0	---
TOTAL	631	1384	1945	1281	6285	4271	1250	998	483	339.0	186.0	361.0
MEAN	20.4	46.1	62.7	41.3	224	138	41.7	32.2	16.1	10.9	6.00	12.0
MAX	32	115	129	76	706	670	80	52	21	17	7.0	35
MIN	15	15	38	32	32	38	31	22	12	7.0	5.0	5.5
AC-FT	1250	2750	3860	2540	12470	8470	2480	1980	958	672	369	716

CAL YR 1978 TOTAL 23010.6 MEAN 63.0 MAX 525 MIN 8.0 AC-FT 45640
WTR YR 1979 TOTAL 19414.0 MEAN 53.2 MAX 706 MIN 5.0 AC-FT 38510

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH.--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1965 to current year.

INSTRUMENTATION.--Temperature recorder since March 1965.

REMARKS.--Interruptions in record due to malfunctions of the instrument. Records represent water temperatures at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 19.0°C July 8, 1968; minimum, 1.0°C Dec. 27, 1965, Dec. 31, 1968, Jan. 23, 31, Feb. 7, 1969, Jan. 14, 15, 1971.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 17.5 °C July 18-20; minimum recorded, 4.5°C Nov. 11, 12.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.0	9.5	10.5	8.0	6.0	7.0				---	---	---
2	11.5	9.5	10.5	8.0	7.0	7.5				---	---	---
3	12.0	9.0	10.5	9.0	8.0	8.5				---	---	---
4	11.5	9.5	10.5	9.0	8.0	8.5				12.0	9.5	11.0
5	11.5	8.5	10.0	8.5	7.0	7.5				10.5	8.0	9.0
6	11.5	8.5	10.0	9.0	7.5	8.0				---	---	---
7	12.0	10.5	11.0	9.5	8.5	9.0				---	---	---
8	12.5	10.5	11.5	9.5	7.5	9.0				---	---	---
9	11.5	10.0	11.0	8.0	6.5	7.5				---	---	---
10	11.0	10.0	10.5	6.5	5.5	6.0				---	---	---
11	11.5	9.0	10.5	6.0	4.5	5.5				---	---	---
12	11.0	9.0	10.0	5.5	4.5	5.0				---	---	---
13	10.5	8.0	9.5	---	---	---				---	---	---
14	10.5	8.0	9.5	---	---	---				---	---	---
15	11.0	8.5	9.5	---	---	---				---	---	---
16	11.0	10.0	10.5	---	---	---				---	---	---
17	12.0	10.5	11.0	---	---	---				---	---	---
18	11.0	9.0	10.0	---	---	---				---	---	---
19	11.0	9.0	10.0	---	---	---				---	---	---
20	11.5	10.5	11.0	---	---	---				---	---	---
21	10.0	8.5	9.5	---	---	---				---	---	---
22	10.5	8.5	9.0	---	---	---				---	---	---
23	10.0	8.5	9.5	---	---	---				---	---	---
24	11.0	9.0	10.0	---	---	---				---	---	---
25	9.0	7.0	8.0	---	---	---				---	---	---
26	8.5	7.0	8.0	---	---	---				---	---	---
27	10.0	8.5	9.0	---	---	---				---	---	---
28	10.0	9.0	9.5	---	---	---				---	---	---
29	9.5	8.0	8.5	---	---	---				---	---	---
30	8.5	7.5	8.0	---	---	---				---	---	---
31	8.0	6.5	7.0	---	---	---				---	---	---
MONTH	12.5	6.5	10.0	9.5	4.5	7.5				12.0	8.0	10.0

12059500 NORTH FORK SKOKOMISH RIVER NEAR POTLATCH--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1				---	---	---	8.0	5.5	6.5	---	---	---
2				---	---	---	---	---	---	---	---	---
3				---	---	---	---	---	---	---	---	---
4				---	---	---	---	---	---	---	---	---
5				---	---	---	---	---	---	---	---	---
6				---	---	---	---	---	---	---	---	---
7				---	---	---	---	---	---	---	---	---
8				---	---	---	---	---	---	---	---	---
9				---	---	---	---	---	---	---	---	---
10				---	---	---	---	---	---	---	---	---
11				---	---	---	---	---	---	---	---	---
12				---	---	---	---	---	---	---	---	---
13				---	---	---	---	---	---	---	---	---
14				---	---	---	---	---	---	---	---	---
15				8.5	7.0	7.5	---	---	---	---	---	---
16				8.0	6.0	7.0	---	---	---	---	---	---
17				8.0	6.5	7.0	---	---	---	---	---	---
18				8.5	6.5	7.0	---	---	---	13.5	9.5	11.0
19				9.0	5.5	7.0	---	---	---	14.0	8.5	11.0
20				9.0	5.5	7.0	---	---	---	14.0	9.0	11.0
21				9.5	5.5	7.0	---	---	---	15.0	9.0	11.5
22				9.5	5.5	7.0	---	---	---	14.0	9.5	11.5
23				10.0	5.5	7.5	---	---	---	12.0	10.5	11.0
24				10.0	6.0	7.5	---	---	---	14.0	10.0	12.0
25				8.0	6.5	7.0	---	---	---	15.5	10.0	12.5
26				9.0	6.5	7.5	---	---	---	15.0	10.5	12.0
27				8.5	6.5	7.5	---	---	---	12.5	9.0	10.5
28				9.5	6.5	7.5	---	---	---	12.0	8.0	10.0
29				9.5	5.5	7.0	---	---	---	11.5	8.0	10.0
30				9.5	5.5	7.0	---	---	---	14.0	8.0	11.0
31				9.5	5.5	7.0	---	---	---	14.5	9.0	11.5
MONTH				10.0	5.5	7.0	8.0	5.5	6.5	15.5	8.0	11.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	15.0	9.5	12.0	14.0	10.0	11.5	15.0	12.5	13.5	12.5	11.5	12.0
2	16.0	10.0	13.0	13.0	9.0	11.0	16.5	12.5	14.0	12.0	11.5	12.0
3	15.5	10.5	13.0	14.5	9.5	12.0	16.0	12.5	14.0	13.5	11.5	12.0
4	14.5	11.0	12.5	14.0	11.0	12.0	15.5	11.0	13.5	12.5	11.0	11.5
5	15.5	11.0	13.0	15.5	11.0	13.0	16.0	11.5	13.5	13.0	11.5	12.0
6	14.5	9.5	12.0	14.5	11.0	12.5	15.5	11.0	13.0	---	---	---
7	14.5	9.0	11.5	13.0	11.0	12.0	16.0	11.0	13.5	---	---	---
8	15.0	9.5	12.0	14.5	11.5	13.0	16.0	11.5	13.5	---	---	---
9	15.5	10.0	12.5	14.5	11.5	13.0	16.0	11.0	13.5	---	---	---
10	15.5	10.5	13.0	13.0	11.5	12.0	16.0	11.5	13.5	---	---	---
11	14.0	10.5	12.0	13.0	11.0	12.0	15.5	11.5	13.0	---	---	---
12	14.5	9.0	11.5	14.0	11.0	12.5	15.5	11.0	13.0	---	---	---
13	14.0	9.5	11.5	13.0	10.5	12.0	14.5	11.0	12.5	---	---	---
14	14.5	9.0	11.5	15.5	10.5	13.0	12.5	11.5	12.0	---	---	---
15	13.0	9.5	11.5	16.0	11.0	13.5	15.0	11.5	12.5	---	---	---
16	13.0	10.0	11.5	17.0	11.5	14.0	15.0	11.5	13.0	---	---	---
17	11.5	10.5	11.0	17.0	12.0	14.5	15.0	11.5	13.0	---	---	---
18	14.5	10.0	12.0	17.5	12.0	15.0	12.5	11.5	12.0	---	---	---
19	14.5	10.5	12.0	17.5	12.5	15.0	13.0	11.5	12.0	---	---	---
20	12.5	10.5	11.0	17.5	12.5	15.0	14.0	11.5	12.5	---	---	---
21	13.5	9.5	11.5	14.5	12.5	13.5	12.5	11.5	12.0	---	---	---
22	14.0	9.5	11.5	16.0	12.0	14.0	14.0	11.0	12.5	---	---	---
23	15.0	9.5	12.5	16.0	12.0	14.0	13.0	11.0	12.0	---	---	---
24	16.0	10.5	13.0	16.0	12.0	14.0	15.0	11.0	12.5	---	---	---
25	16.0	10.5	13.0	16.5	12.0	14.0	15.0	11.0	12.5	---	---	---
26	16.5	11.0	13.5	17.0	12.0	14.5	15.5	11.5	13.0	---	---	---
27	15.0	11.0	13.0	16.0	12.0	14.0	13.0	11.5	12.5	---	---	---
28	15.5	10.5	13.0	15.0	12.0	13.5	13.5	11.0	12.0	---	---	---
29	13.0	11.0	12.0	15.5	11.0	13.5	13.5	11.5	12.5	---	---	---
30	14.0	11.0	12.0	16.5	11.5	14.0	13.5	11.5	12.5	---	---	---
31	---	---	---	17.0	12.0	14.5	13.5	10.5	12.0	---	---	---
MONTH	16.5	9.0	12.0	17.5	9.0	13.5	16.5	10.5	13.0	13.5	11.0	12.0
YEAR	17.5	4.5	11.0									

12060500 SOUTH FORK SKOKOMISH RIVER NEAR UNION, WA

LOCATION.--Lat 47°20'26". long 123°16'44", in SW¼NE¼ sec.2, T.21 N., R.5 W., Mason County, Hydrologic Unit 17110017, on right bank 3.0 mi (4.8 km) upstream from Vance Creek, 3.2 mi (5.1 km) upstream from confluence with North Fork and 8.5 mi (13.7 km) west of Union.

DRAINAGE AREA.--76.3 mi² (198 km²).

PERIOD OF RECORD.--August 1931 to current year.

REVISED RECORDS.--WSP 1216: 1950. WSP 1316: 1934(M), 1938(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 103.35 ft (31.501 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--48 years, 732 ft³/s (20.73 m³/s) 130.28 in/yr (3,309 mm/yr), 530,300 acre-ft/yr (654 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,600 ft³/s (612 m³/s) Jan. 22, 1935, Nov. 26, 1949, gage height, 11.0 ft (3.35 m) from rating curve extended above 11,000 ft³/s (312 m³/s); minimum, 62 ft³/s (1.76 m³/s) Sept. 18, 1938; minimum gage height, 1.06 ft (0.323 m) Oct. 3, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 25	2200	6,200	176	5.20	1.585	Mar. 4	2000	*9,960	282	*6.29	1.917

Minimum discharge, 83 ft³/s (2.35 m³/s) Aug. 30, 31, Sept. 1, gage height, 1.44 ft (0.439 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	368	138	617	300	229	1080	356	410	270	197	115	93
2	338	160	496	280	217	892	344	386	285	174	115	160
3	315	350	496	261	213	840	332	380	290	153	112	518
4	295	1700	534	256	213	4660	326	503	280	147	110	566
5	280	900	454	243	468	4980	332	1220	275	141	107	916
6	265	600	398	234	1110	3250	344	1270	261	138	107	510
7	252	450	356	225	1510	2600	338	1080	243	132	105	362
8	243	650	326	217	1060	1720	356	800	229	193	102	770
9	238	454	332	209	2440	1320	344	653	221	193	102	988
10	238	386	410	315	1400	1110	332	558	225	380	100	599
11	243	338	1250	285	1180	1040	320	503	221	475	97	440
12	225	300	860	261	2440	976	482	468	217	386	97	362
13	213	275	644	247	4160	670	1430	447	209	280	95	310
14	205	252	710	238	2140	820	940	434	201	234	97	275
15	197	261	662	225	1360	880	653	422	193	209	97	247
16	193	526	608	217	1070	820	534	410	189	193	97	229
17	185	740	617	213	1180	720	482	392	193	181	95	213
18	181	590	558	205	1770	644	440	374	185	171	100	201
19	174	599	489	221	1290	590	404	368	178	167	112	189
20	171	489	440	617	976	558	386	362	174	160	100	181
21	164	422	410	1010	810	542	368	362	171	153	105	174
22	160	374	566	671	700	526	362	362	167	150	115	167
23	157	338	608	518	644	510	368	368	164	144	100	160
24	160	310	730	447	780	518	380	356	160	141	95	157
25	153	305	635	386	4430	510	392	338	157	135	91	150
26	150	290	534	350	3680	482	392	350	157	132	89	144
27	144	285	468	315	2010	447	410	332	157	129	89	144
28	144	350	416	290	1400	422	434	305	153	126	89	144
29	164	338	380	270	---	404	422	280	150	123	85	141
30	153	534	350	256	---	386	410	265	157	120	85	138
31	144	---	320	238	---	368	---	261	---	117	83	---
TOTAL	6512	13704	16674	10020	40880	35485	13413	15019	6132	5774	3088	9648
MEAN	210	457	538	323	1460	1145	447	484	204	186	99.6	322
MAX	368	1700	1250	1010	4430	4980	1430	1270	290	475	115	988
MIN	144	138	320	205	213	368	320	261	150	117	83	93
CFSM	2.75	5.99	7.05	4.23	19.1	15.0	5.86	6.34	2.67	2.44	1.31	4.22
IN.	3.17	6.68	8.13	4.89	19.93	17.30	6.54	7.32	2.99	2.82	1.51	4.70
AC-FT	12920	27180	33070	19870	81090	70380	26600	29790	12160	11450	6130	19140

CAL YR 1978 TOTAL 221518 MEAN 607 MAX 4400 MIN 97 CFSM 7.96 IN 108.00 AC-FT 439400
WTR YR 1979 TOTAL 176349 MEAN 483 MAX 4980 MIN 83 CFSM 6.33 IN 85.98 AC-FT 349800

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA

LOCATION.--Lat 47°18'36", long 123°10'33", in SE¼NW¼ sec.15, T.21 N., R.4 W., Mason County, Hydrologic Unit 17110017, on upstream side of right pier of bridge on U.S. Highway 101, 3.7 mi (6.0 km) downstream from confluence of North and South Forks, 4.7 mi (7.6 km) southwest of Potlatch, and at mile 5.3 (8.5 km).

DRAINAGE AREA.--227 mi³ (588 km²), includes 99 mi³ (256 km²) above Cushman Dam No. 2 which is normally noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1943 to current year.

REVISED RECORDS.--WSP 1716: 1950(M), 1956. WSP 1932: Drainage area. WRD Wash. 1972: 1968(M), 1971(M). WRD Wash. 1975: 1974.

GAGE.--Water-stage recorder. Datum of gage is 10.67 ft (3.252 m) National Geodetic Vertical Datum of 1929. Prior to May 27, 1964, water-stage recorders or nonrecording gage at several sites about 0.6 mi (1.0 km) upstream at different datums. Supplementary water-stage recorder on right bank at site 0.6 mile (1.0 km) upstream at datum 16.47 ft (5.020 m) National Geodetic Vertical Datum of 1929, used Nov. 16 to Dec. 10, 1964, June 11 to July 7, and Nov. 2-24, 1965.

REMARKS.--Water-discharge records good. Flow partly regulated by Lake Cushman and Cushman Reservoir No. 2. In normal years practically entire flow of North Fork is diverted at Cushman Dam No. 2 and is discharged into Puget Sound through Cushman powerplant No. 2.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,000 ft³/s (765 m³/s) Nov. 3, 1955, gage height, 12.6 ft (3.84 m) site and datum then in use; minimum, 125 ft³/s (3.54 m³/s), Sept. 14-17, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1933 reached an elevation of 30.8 ft (9.39 m) National Geodetic Vertical Datum of 1929, at site on left bank 150 ft (46 m) above old highway bridge, discharge, 18,600 ft³/s (527 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,300 ft³/s (405 m³/s) Mar. 5, gage height, 15.62 ft (4.761 m); minimum, 168 ft³/s (4.76 m³/s) part or all of each day Aug. 26 to Sept. 1, gage height, 8.22 ft (2.505 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	580	304	931	548	412	1780	525	562	390	298	207	174
2	545	310	796	510	391	1580	510	548	397	285	207	220
3	517	412	764	475	384	1380	495	525	405	264	200	502
4	489	2310	820	440	384	5460	487	622	397	252	197	645
5	468	1050	724	426	636	8920	487	1280	397	246	192	1020
6	447	756	652	412	1350	4910	495	1460	382	244	191	692
7	433	644	596	398	2370	3700	495	1420	360	242	190	502
8	419	668	552	384	1500	2520	510	1110	346	280	186	748
9	405	708	560	377	3260	1980	510	940	339	295	181	1240
10	412	616	660	503	2180	1700	495	820	332	438	181	844
11	426	551	1600	482	1800	1580	487	732	332	585	181	630
12	398	510	1300	447	3070	1460	812	668	325	517	181	517
13	384	473	960	426	5610	1250	1810	637	320	397	181	442
14	370	444	1080	412	3120	1110	1410	615	312	339	181	382
15	364	439	930	398	2030	1170	[illegible]	607	306	318	187	353
16	352	724	880	391	1620	1120	868	592	299	290	181	325
17	346	1030	1020	377	1750	1020	772	570	308	276	181	304
18	340	693	910	370	2840	932	700	548	310	262	181	297
19	340	960	830	391	2130	868	645	532	290	262	200	283
20	334	812	750	692	1670	820	607	517	282	255	194	269
21	328	708	700	1370	1390	788	585	517	280	248	187	262
22	322	637	900	1010	1200	764	570	510	276	241	200	255
23	322	576	990	812	1100	740	555	510	268	234	187	248
24	322	539	1200	708	1230	732	555	502	264	234	181	241
25	322	525	1020	628	5640	716	562	480	261	227	181	234
26	316	509	890	573	5660	692	562	487	259	227	174	227
27	310	497	810	531	3160	652	570	472	256	220	174	220
28	310	560	740	496	2250	615	592	450	253	220	168	220
29	322	563	680	468	---	592	585	420	251	213	168	220
30	322	733	630	447	---	570	570	397	270	213	168	220
31	310	---	580	426	---	548	---	390	---	207	168	---
TOTAL	11875	20661	26375	16320	60137	52509	19856	20432	9467	8021	5736	12736
MEAN	383	689	851	526	2148	1694	662	659	316	285	185	425
MAX	580	2310	1600	1370	5660	8920	1810	1460	405	585	207	1240
MIN	310	304	552	370	384	548	487	390	251	207	168	174
AC-FT	23550	40980	52310	32370	119300	104200	39380	40530	18780	17500	11380	25260

CAL YR 1978 TOTAL 313535 MEAN 859 MAX 5560 MIN 210 AC-FT 621900
WTR YR 1979 TOTAL 264925 MEAN 726 MAX 8920 MIN 168 AC-FT 525500

NOTE.--No gage-height record Dec. 8 to Jan. 4 and June 12 to July 10.

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1955 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1955 to September 1962, October 1963 to current year.

INSTRUMENTATION.--Temperature recorder since May 1955.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Records represent water temperatures at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 20.5°C July 13, 1961; minimum, (1955-62, 1964-79) 1.0°C Mar. 7, 1956.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 16.0°C July 17-19; minimum recorded, 3.5°C Jan. 5-7, 31.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978									
19...	1340	334	64	7.7	10.6	5	.00	11.2	23
NOV									
09...	1435	692	132	7.2	8.0	5	1.0	10.9	4
DEC									
07...	1305	588	62	7.4	5.5	0	.00	12.1	1
JAN , 1979									
09...	1345	370	72	7.0	5.8	--	.00	11.7	14
FEB									
08...	1325	1360	59	7.4	5.7	--	5.0	11.6	3
MAR									
08...	1400	2440	49	7.3	7.6	10	15	12.6	1
APR									
09...	0715	518	61	7.6	7.0	5	.00	11.2	5
MAY									
10...	0655	844	50	7.2	7.8	5	1.0	11.1	22
JUN									
07...	0735	375	65	7.0	9.5	5	.00	10.4	27
JUL									
12...	1005	525	68	7.4	8.6	5	1.0	10.4	25
AUG									
09...	1205	188	71	7.0	12.2	5	.00	10.1	4
SEP									
13...	1140	442	73	6.9	11.0	5	.00	10.1	11

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT , 1978								
19...	.03	.00	.26	.26	.29	1.3	.010	.00
NOV								
09...	.08	.01	.18	.19	.27	1.2	.020	.02
DEC								
07...	.12	.01	.22	.23	.35	1.6	.020	.00
JAN , 1979								
09...	.12	.04	.10	.14	.26	1.2	.020	.00
FEB								
08...	.18	.01	.06	.07	.25	1.1	.000	.00
MAR								
08...	.11	.00	.26	.26	.37	1.6	.010	.00
APR								
09...	.07	.00	.05	.05	.12	.53	.050	.03
MAY								
10...	.07	.00	.05	.05	.12	.53	.000	.07
JUN								
07...	.05	.01	.04	.05	.10	.44	.010	.04
JUL								
12...	.08	.01	.12	.13	.21	.93	.000	.00
AUG								
09...	.05	.00	.00	.00	.05	.22	.010	.00
SEP								
13...	.08	.01	.40	.41	.49	2.2	.000	.01

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.5	9.5	10.5	9.0	7.5	8.0				---	---	---
2	12.0	9.5	10.5	9.0	8.0	8.5				---	---	---
3	12.0	9.5	10.5	9.5	9.0	9.0				---	---	---
4	11.5	9.5	10.5	9.5	8.0	8.5				---	---	---
5	11.5	9.0	10.0	8.5	7.0	8.0				4.5	3.5	4.0
6	11.5	9.0	10.0	9.0	7.5	8.5				4.5	3.5	4.0
7	12.0	10.0	11.0	9.5	8.5	9.0				4.5	3.5	4.0
8	12.0	10.0	11.0	9.5	8.0	9.0				5.5	4.0	4.5
9	11.0	10.0	10.5	8.5	7.0	7.5				6.0	5.5	5.5
10	11.0	10.0	10.5	7.0	6.0	6.5				6.5	5.5	6.0
11	11.0	9.0	10.0	7.0	5.5	6.0				6.0	5.5	6.0
12	11.0	9.0	10.0	7.0	5.5	6.0				6.5	5.5	6.0
13	11.0	8.5	9.5	7.0	5.5	6.0				6.0	5.0	5.5
14	11.0	8.5	9.5	7.0	5.5	6.0				6.0	5.5	5.5
15	11.5	9.0	10.0	6.5	5.5	6.0				6.5	6.0	6.0
16	11.0	10.0	10.5	6.5	6.0	6.5				6.5	6.0	6.0
17	11.5	10.0	10.5	7.0	6.5	6.5				7.0	5.5	6.5
18	11.5	9.5	10.0	7.0	6.0	7.0				6.5	5.0	5.5
19	11.5	9.0	10.0	6.0	5.5	6.0				7.0	6.0	6.5
20	11.5	10.0	10.5	7.0	6.0	6.0				7.0	5.5	6.5
21	10.5	9.0	9.5	6.5	5.0	5.5				6.0	5.5	5.5
22	11.0	8.5	9.5	6.5	5.0	5.5				5.5	5.0	5.5
23	11.0	9.0	9.5	6.5	5.5	6.0				6.5	5.5	6.0
24	11.0	9.5	10.0	7.5	6.5	7.0				6.5	5.5	6.0
25	10.0	8.0	9.0	7.5	7.0	7.0				6.0	5.5	5.5
26	9.5	8.0	8.5	---	---	---				5.5	5.0	5.5
27	10.0	9.0	9.5	---	---	---				6.0	5.0	5.5
28	10.0	9.0	9.5	---	---	---				6.0	5.0	5.5
29	10.0	8.5	9.0	---	---	---				6.0	5.0	5.5
30	9.5	8.0	8.5	---	---	---				5.5	4.0	4.5
31	9.0	7.5	8.0	---	---	---				5.5	3.5	4.5
MONTH	12.0	7.5	10.0	9.5	5.0	7.0				7.0	3.5	5.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	5.5	4.5	4.5	6.5	5.0	6.0	8.5	6.5	7.5	10.0	9.0	9.0
2	5.5	4.0	4.5	7.5	5.5	6.5	9.5	7.0	8.0	10.5	8.5	9.0
3	6.0	5.0	5.5	6.5	6.0	6.5	9.5	7.0	8.0	11.0	8.5	9.5
4	7.0	6.0	6.5	6.5	5.0	6.0	10.5	7.5	9.0	10.5	9.0	9.5
5	6.5	6.0	6.5	6.5	5.0	6.0	11.0	8.0	9.0	10.0	8.5	9.0
6	6.0	5.0	5.5	7.5	6.5	6.5	10.5	8.0	9.0	8.5	7.5	8.0
7	5.5	4.5	5.0	7.5	5.5	6.5	10.5	7.0	8.5	9.0	7.0	8.0
8	6.0	5.5	5.5	7.5	6.0	6.5	9.5	7.5	8.0	---	---	---
9	6.5	5.5	6.0	8.0	5.0	6.5	10.0	7.0	8.0	---	---	---
10	6.0	6.0	6.0	8.0	5.5	6.5	8.0	7.0	7.5	---	---	---
11	6.5	6.0	6.0	7.5	6.5	7.0	10.0	6.5	8.0	---	---	---
12	6.5	6.0	6.0	8.5	6.5	7.0	7.5	7.0	7.0	---	---	---
13	6.0	5.5	6.0	8.5	5.5	7.0	9.5	6.5	7.0	---	---	---
14	5.5	5.0	5.5	8.0	6.0	7.0	8.5	6.0	7.0	---	---	---
15	5.5	5.0	5.5	8.0	6.5	7.5	8.5	6.5	7.5	---	---	---
16	5.5	5.5	5.5	8.0	6.0	7.0	7.5	6.5	7.0	---	---	---
17	5.5	4.5	5.0	8.0	6.0	7.0	9.5	6.5	8.0	12.5	8.5	10.5
18	6.0	5.0	5.5	8.0	6.5	7.0	9.5	7.0	8.0	13.0	9.0	11.0
19	6.0	5.5	5.5	9.0	5.5	7.0	9.5	7.0	8.0	13.0	8.5	10.5
20	6.0	5.0	5.5	9.0	6.0	7.5	11.0	7.5	9.0	13.5	9.0	11.0
21	6.5	5.5	6.0	9.5	6.0	7.5	11.0	7.0	9.0	14.0	9.0	11.0
22	6.5	5.5	6.0	9.5	6.0	7.5	11.0	7.5	9.0	13.0	9.5	11.0
23	6.5	6.0	6.0	9.5	6.0	7.5	11.0	8.0	9.5	11.5	10.0	10.5
24	6.0	5.0	5.0	10.0	6.5	8.0	11.5	8.0	9.5	13.5	9.5	11.0
25	5.0	5.0	5.0	8.5	7.0	7.5	11.5	8.0	9.5	14.0	9.5	11.5
26	6.5	5.0	6.0	9.0	6.5	7.5	12.0	8.0	10.0	14.0	10.5	11.5
27	6.5	4.5	5.5	8.5	7.0	7.5	12.0	8.5	10.0	12.0	9.0	10.5
28	6.5	5.0	5.5	9.5	6.5	8.0	10.0	9.0	9.5	12.0	8.0	10.0
29	---	---	---	9.5	6.5	7.5	11.5	8.5	9.5	12.0	8.5	10.0
30	---	---	---	9.5	6.5	8.0	12.0	8.5	10.0	13.5	8.5	10.5
31	---	---	---	10.0	6.5	7.5	---	---	---	14.0	9.0	11.5
MONTH	7.0	4.0	5.5	10.0	5.0	7.0	12.0	6.0	8.5	14.0	7.0	10.0

12061500 SKOKOMISH RIVER NEAR POTLATCH, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.5	9.5	12.0	13.0	10.0	11.0	13.5	10.5	11.5	11.5	10.0	10.5
2	15.0	10.5	12.0	12.5	9.5	11.0	14.0	10.5	12.0	11.5	10.5	11.0
3	15.0	10.5	12.5	14.0	9.5	11.5	13.5	10.5	11.5	13.5	10.5	12.0
4	14.0	10.5	12.0	13.5	10.0	11.5	14.0	9.5	11.5	12.5	11.0	12.0
5	14.5	10.5	12.0	14.5	10.0	12.0	13.5	10.0	11.5	13.0	11.5	12.0
6	13.5	10.0	11.5	13.5	10.0	11.5	13.5	9.5	11.5	12.5	11.0	11.5
7	13.5	9.5	11.5	12.0	10.0	11.0	14.0	9.5	11.5	13.0	11.0	12.0
8	14.5	9.5	11.5	14.0	10.0	11.5	14.0	10.0	11.5	13.0	11.0	12.0
9	14.5	10.0	12.0	13.5	11.0	12.0	14.0	9.5	11.5	13.5	11.0	12.0
10	15.0	10.5	12.5	13.0	10.5	11.5	14.0	10.0	11.5	13.5	10.5	11.5
11	13.5	10.0	11.5	12.5	10.5	11.5	13.5	10.0	11.0	13.5	10.0	11.5
12	14.0	9.0	11.5	13.5	10.5	12.0	---	---	---	13.5	10.0	11.5
13	14.0	9.5	11.5	12.5	10.0	11.5	---	---	---	14.0	10.0	11.5
14	14.0	9.0	11.0	15.0	10.0	12.0	---	---	---	14.0	10.5	12.0
15	12.5	9.5	11.0	15.5	10.5	12.5	---	---	---	13.5	11.0	12.0
16	13.0	9.5	11.0	15.5	11.0	13.0	---	---	---	13.5	11.0	12.0
17	11.0	10.0	10.5	16.0	11.0	13.0	13.5	10.0	11.5	13.5	10.5	12.0
18	14.0	9.5	11.5	16.0	11.0	13.0	11.0	10.0	10.5	13.5	10.5	11.5
19	13.5	10.0	11.5	16.0	11.0	13.0	11.5	10.0	11.0	12.0	11.0	11.5
20	12.0	10.0	11.0	15.5	11.5	13.0	12.5	10.0	11.0	12.0	11.0	11.5
21	12.5	9.0	11.0	13.5	11.0	12.0	11.5	10.0	10.5	12.5	10.5	11.5
22	13.5	9.0	11.0	14.5	10.5	12.5	13.0	10.0	11.0	12.5	10.5	11.5
23	13.5	9.0	11.5	14.5	10.5	12.0	11.5	9.5	10.5	12.5	10.0	11.0
24	14.5	9.5	12.0	14.5	10.5	12.0	13.0	9.5	11.0	13.0	10.0	11.0
25	15.0	9.5	12.0	14.5	10.5	12.0	13.0	9.5	11.0	12.5	10.0	11.0
26	15.0	10.0	12.5	15.0	10.5	12.5	13.5	10.0	11.5	12.5	10.5	11.5
27	14.0	10.0	11.5	14.0	10.5	12.0	12.5	10.0	11.0	11.5	10.0	11.0
28	14.5	10.0	12.0	13.0	10.5	11.5	12.5	9.5	11.0	12.0	9.5	10.5
29	12.5	10.0	11.0	13.5	9.5	11.5	12.0	10.0	11.0	11.5	9.5	10.5
30	13.5	10.0	11.0	14.5	10.0	12.0	12.0	10.0	11.0	12.0	10.0	10.5
31	---	---	---	15.0	10.5	12.5	12.0	9.5	10.5	---	---	---
MONTH	15.0	9.0	11.5	16.0	9.5	12.0	14.0	9.5	11.0	14.0	9.5	11.5
YEAR	16.0	3.5	9.0									

12069550 BIG BEEF CREEK NEAR SEABECK, WA

LOCATION.--Lat 47°38'27", long 122°47'02", in NW¼SE¼ sec.22, T.25 N., R.1 W., Kitsap County, Hydrologic Unit 17110018, on left bank 1.1 mi (1.8 km) upstream from county road bridge across Big Beef Harbor and 1.9 mi (3.1 km) east of Seabeck.

DRAINAGE AREA.--13.8 mi² (35.7 km²).

PERIOD OF RECORD.--August 1969 to current year.

REVISED RECORDS.--WRD WA-76-1: 1975 (M).

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12 m), from topographic map. Prior to July 7, 1978, at site 110 ft (36 m) downstream at datum 2.03 ft (0.619 m) lower.

REMARKS.--Records good. Flow may be partially regulated by Lake Symington, 4.6 mi (7.4 km) upstream. No diversions above station.

AVERAGE DISCHARGE.--10 years, 39.1 ft³/s (1.107 m³/s), 38.48 in/yr (977 mm/yr), 28,330 acre-ft/yr (34.93 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 757 ft³/s (21.4 m³/s) Dec. 7, 1970; m); maximum gage height, 5.74 ft (1.750 m) Jan. 16, 1974, site and datum then in use; minimum discharge, 2.3 ft³/s (0.065 m³/s) Aug. 30, 31, 1970, Sept. 2, 1974, but may have been less during period of no gage-height record Sept. 3-30,1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 275 ft³/s (7.79 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 13	0700	296	8.38	3.95	1.204	Feb. 25	1900	*459	13.0	*4.92	1.500
Feb. 18	0600	324	9.18	4.12	1.256	Mar. 5	0600	289	8.18	4.07	1.240

Minimum discharge, 3.1 ft³/s (0.088 m³/s) on part of each day July 30, 31, Aug. 2-5, 10-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	7.4	30	12	15	121	17	10	6.8	6.0	3.7	6.5
2	17	6.9	28	12	14	93	17	9.6	8.0	4.8	3.3	5.8
3	15	14	25	12	13	77	16	9.6	6.2	4.1	3.4	6.9
4	14	50	27	12	13	147	16	11	5.1	4.0	3.3	5.9
5	13	42	26	12	15	264	16	15	6.6	4.3	3.2	7.4
6	12	26	24	12	28	194	16	17	6.6	4.4	3.6	6.7
7	12	20	21	12	26	133	16	18	6.1	4.8	3.4	6.5
8	11	19	19	12	30	101	16	18	5.7	4.5	3.4	8.5
9	9.4	18	19	12	66	81	16	15	6.1	4.9	3.5	7.1
10	7.9	15	27	23	69	68	16	14	5.9	6.0	3.3	6.6
11	6.9	13	51	24	72	59	16	13	5.6	4.9	3.3	6.1
12	6.0	12	47	21	138	51	19	11	5.9	5.0	3.4	5.6
13	5.2	11	39	18	275	46	24	10	6.3	4.7	3.2	5.6
14	6.9	10	35	16	193	43	23	10	5.9	4.3	3.8	5.6
15	13	12	31	15	138	41	21	9.9	5.5	4.0	3.8	5.2
16	12	28	29	15	121	35	19	9.6	4.8	4.2	3.4	5.2
17	9.9	26	32	14	175	29	19	8.9	4.4	4.2	3.4	4.8
18	8.4	25	32	14	292	31	18	9.6	4.4	4.0	4.1	4.8
19	6.9	29	31	13	202	29	17	9.3	4.4	4.4	4.2	4.6
20	6.9	25	28	20	154	28	16	8.7	4.7	4.3	4.0	4.8
21	6.9	23	25	33	128	26	15	8.3	5.1	4.6	3.7	5.2
22	6.4	21	25	32	112	22	14	8.0	4.8	4.2	3.9	4.8
23	6.4	19	24	29	105	21	14	7.1	4.8	3.9	3.8	4.4
24	7.4	18	21	28	138	21	14	7.4	5.2	3.7	3.9	4.4
25	8.4	19	21	25	374	21	13	7.1	4.7	3.8	3.7	4.8
26	9.4	18	19	23	333	20	13	6.8	4.4	3.4	3.8	4.8
27	6.9	18	18	21	239	19	13	6.7	4.4	3.4	3.7	4.8
28	6.4	18	18	20	165	19	13	6.5	6.9	3.4	3.7	4.8
29	8.9	19	15	19	---	18	13	6.9	6.2	3.7	3.9	4.8
30	7.9	25	13	18	---	17	12	6.6	5.3	3.3	4.3	4.8
31	8.4	---	12	17	---	17	---	6.8	---	3.2	4.3	---
TOTAL	294.8	605.3	812	566	3640	1892	488	315.4	167.8	132.4	113.4	165.6
MEAN	9.51	20.2	26.2	18.3	130	61.0	16.3	10.2	5.59	4.27	3.66	5.52
MAX	18	50	51	33	374	264	24	18	8.0	6.0	4.3	8.5
MIN	5.2	6.9	12	12	13	17	12	6.5	4.4	3.2	3.2	4.4
CFSM	.69	1.46	1.90	1.33	9.42	4.42	1.18	.74	.41	.31	.27	.40
IN.	.79	1.63	2.19	1.53	9.81	5.10	1.32	.85	.45	.36	.31	.45
AC-FT	585	1200	1610	1120	7220	3750	968	626	333	263	225	328

CAL YR 1978 TOTAL 12335.2 MEAN 33.8 MAX 224 MIN 3.5 CFSM 2.45 IN 33.25 AC-FT 24470
WTR YR 1979 TOTAL 9192.7 MEAN 25.2 MAX 374 MIN 3.2 CFSM 1.83 IN 24.78 AC-FT 18230

12073500 HUGE CREEK NEAR WAUNA, WA

LOCATION.--Lat 47°23'22", long 122°41'52", at north line sec.20, T.22 N., R.1 E., Pierce County, Hydrologic Unit 17110019, on right bank 25 ft (7.6 km) upstream from bridge, 0.1 mi (0.2 km) upstream from mouth, and 2.5 mi (4.02 km) west of Wauna.

DRAINAGE AREA.--6.47 mi² (16.76 km²).

PERIOD OF RECORD.--July 1947 to September 1969, October 1977 to current year.

REVISED RECORDS.--WSP 1636: 1953-54, 1956, 1957(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 100 ft (30.5 m) from topographic map. Prior to Sept. 27, 1978, at site 50 ft (15 m) downstream and prior to June 26, 1951, at datum 0.80 ft (0.262 m) higher.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--24 years (water years 1948-69, 1978-79) 11.4 ft³/s (0.323 m³/s), 23.93 in/yr (608 mm/yr), 8,260 acre-ft/yr (10.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 391 ft³/s (11.1 m³/s) Feb. 9, 1951, gage height, 4.50 ft (1.372 m) present datum; minimum, 3.2 ft³/s (0.091 m³/s) Sept. 1, 1950.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 70 ft³/s (1.98 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 4-5	2400-0100	*69	1.95	*2.59	0.789

Minimum discharge, 3.3 ft³/s (0.093 m³/s) Sept. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	4.0	6.2	4.7	4.8	20	6.2	6.1	5.0	5.8	4.7	3.9
2	7.3	4.2	5.5	4.7	4.7	17	6.2	5.9	5.0	5.0	4.7	4.2
3	6.9	6.4	5.5	4.7	4.8	16	6.2	5.9	4.9	4.8	4.7	4.4
4	4.1	11	6.6	4.7	4.8	34	6.2	6.2	5.0	4.7	4.5	4.4
5	4.1	5.4	5.9	4.7	6.0	64	6.0	7.4	5.0	4.7	4.5	4.3
6	4.1	4.9	5.4	4.7	11	53	6.0	7.1	5.0	4.7	4.5	4.0
7	4.0	4.8	5.1	4.7	10	36	5.9	6.5	5.0	4.7	4.5	3.9
8	4.0	4.9	5.1	4.7	8.8	26	6.2	6.1	5.0	4.7	4.5	4.2
9	4.0	4.7	5.7	4.7	14	21	6.0	5.9	4.9	4.7	4.5	4.0
10	4.0	4.7	6.2	7.1	13	17	6.6	5.8	4.9	5.3	4.5	3.8
11	4.1	4.6	6.8	5.5	14	15	7.1	6.2	4.9	5.0	4.5	3.7
12	4.0	4.6	5.5	5.2	33	13	8.5	7.1	4.9	4.9	4.5	3.6
13	4.0	4.6	5.4	4.9	50	12	8.9	7.1	4.9	4.8	4.7	3.5
14	4.0	4.6	5.4	5.1	30	11	7.3	6.6	5.0	4.7	4.9	3.4
15	4.0	5.2	5.2	5.2	20	11	7.1	5.5	5.0	4.7	4.9	3.5
16	4.0	8.3	5.4	5.1	18	10	7.1	5.5	5.0	4.5	4.8	3.5
17	4.0	5.7	5.2	4.9	23	9.3	6.9	5.4	5.0	4.5	4.7	3.5
18	4.0	5.2	5.1	4.8	25	9.1	6.6	5.4	5.0	4.5	4.7	3.5
19	4.0	5.2	4.9	5.2	21	8.5	6.5	5.3	5.0	4.5	4.7	3.6
20	4.1	4.9	4.9	7.3	17	8.3	6.5	5.3	5.0	4.5	4.5	3.6
21	4.0	4.9	4.9	10	15	8.0	6.3	5.3	5.0	4.5	4.5	3.6
22	4.0	4.8	6.0	6.8	13	7.8	6.5	5.3	4.9	4.7	4.4	3.5
23	4.0	4.7	5.4	5.9	13	7.5	6.3	5.3	4.9	4.5	4.2	3.6
24	4.0	4.9	5.1	5.9	20	7.3	6.3	5.3	4.8	4.7	4.1	3.6
25	4.0	5.1	4.9	5.4	45	7.3	6.2	5.1	4.8	4.7	4.0	3.6
26	4.0	5.1	4.9	5.2	44	7.3	6.2	5.1	4.5	4.7	3.9	3.6
27	4.0	5.4	4.8	5.2	37	7.1	6.2	5.3	4.7	4.7	3.8	3.6
28	4.1	5.7	4.7	5.1	27	6.8	6.1	5.3	4.8	4.8	3.7	3.6
29	4.0	5.5	4.6	4.9	---	6.4	6.1	5.3	4.7	4.7	3.8	3.6
30	4.0	7.5	4.6	4.8	---	6.4	6.1	5.1	4.8	4.7	3.8	3.6
31	4.0	---	4.7	4.8	---	6.4	---	5.1	---	4.5	3.7	---
TOTAL	134.9	161.5	165.6	166.6	546.9	489.5	196.3	179.8	147.3	146.9	136.4	112.4
MEAN	4.35	5.38	5.34	5.37	19.5	15.8	6.54	5.80	4.91	4.74	4.40	3.75
MAX	8.1	11	6.8	10	50	64	8.9	7.4	5.0	5.8	4.9	4.4
MIN	4.0	4.0	4.6	4.7	4.7	6.4	5.9	5.1	4.5	4.5	3.7	3.4
CFSM	.67	.83	.83	.83	3.01	2.44	1.01	.90	.76	.73	.68	.58
IN.	.78	.93	.95	.96	3.14	2.81	1.13	1.03	.85	.84	.78	.65
AC-FT	268	320	328	330	1080	971	389	357	292	291	271	223

CAL YR 1978 TOTAL 3009.2 MEAN 8.24 MAX 47 MIN 3.7 CFSM 1.27 IN 17.30 AC-FT 5970
WTR YR 1979 TOTAL 2584.1 MEAN 7.08 MAX 64 MIN 3.4 CFSM 1.09 IN 14.85 AC-FT 5130

12079004 DESCHUTES RIVER AT STATE HIGHWAY 507 NEAR RAINIER, WA

LOCATION.--Lat 46°52'23", long 122°43'44", in SE¼NW¼ sec.18, T.16 N., R.1 E., Thurston County, Hydrologic Unit 17110016, at State Highway 507 bridge, 2.2 mi (3.5 km) southwest of Rainier, 4.3 mi (6.9 km) downstream from former gaging station (12079000), and at mile 21.6 (34.8 km).

DRAINAGE AREA.--101 mi^2 (262 km^2).

PERIOD OF RECORD.--Water years 1959-62, 1968-72, 1975, 1977 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1968 to September 1970.

REMARKS.--Water-discharge obtained by routing flow from former gaging station; discharge value is good. Water temperatures for the period August 1968 to September 1970 collected at gage 4.3 mi (6.9 km) upstream. Prior to October 1974 station published as 12079000.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM COBALT UNITS)	TURBIDITY (NTU)
OCT , 1978							
25...	0920	42	131	7.4	8.4	25	1.0
NOV							
07...	1150	96	104	7.3	8.9	25	4.0
15...	1045	59	120	7.4	1.6	15	1.0
DEC							
05...	1145	253	83	7.1	5.2	50	8.0
JAN , 1979							
30...	1310	114	95	7.1	--	20	4.0
FEB							
21...	1300	431	71	7.1	5.4	70	10
MAR							
13...	1335	232	82	7.1	7.3	20	4.0
APR							
17...	1155	325	74	7.5	7.5	60	9.0
MAY							
22...	1330	88	105	7.8	15.5	20	2.0
JUN							
19...	1130	50	119	7.5	13.8	20	2.0
JUL							
10...	1250	43	122	7.7	16.2	25	3.0
AUG							
07...	1215	28	136	7.7	16.2	15	2.0
SEP							
05...	1230	74	111	7.4	15.3	35	3.0

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1978						
25...	11.7	.21	.01	.020	.01	.03
NOV						
07...	11.1	.31	.01	.010	.00	.00
15...	13.3	.31	.01	.020	.03	.09
DEC						
05...	12.4	.43	.02	.040	.01	.03
JAN , 1979						
30...	13.8	.33	.05	.020	.00	.00
FEB						
21...	12.0	.43	.01	.020	.02	.06
MAR						
13...	11.9	.32	.03	.020	.01	.03
APR						
17...	11.9	.28	.01	.020	.01	.03
MAY						
22...	10.8	.26	.06	.020	.00	.00
JUN						
19...	10.4	.33	.05	.010	.00	.00
JUL						
10...	10.2	.27	.02	.020	.04	.12
AUG						
07...	10.0	.25	.00	.040	.00	.00
SEP						
05...	9.6	.25	.02	.020	.01	.03

12080010 DESCHUTES RIVER AT E STREET BRIDGE AT TUMWATER, WA

LOCATION.--Lat 47°00'43", long 122°54'07", in NW¼ sec.60, T.18 N., R.2 W., Thurston County, Hydrologic Unit 17110016, at E Street bridge in Tumwater, and at mile 2.4 (3.9 km).

DRAINAGE AREA.--162 mi² (420 km²).

PERIOD OF RECORD.--October 1977 to current year.

REMARKS.--Water-discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
25...	1115	94	131	7.4	9.3	20	2.0
NOV							
07...	1305	155	110	7.6	9.2	30	4.0
15...	0940	109	138	7.3	3.0	30	2.0
DEC							
05...	1245	390	91	7.2	6.2	50	7.0
JAN , 1979							
30...	1420	205	108	7.4	--	25	3.0
FEB							
21...	1400	695	82	7.3	6.3	50	9.0
MAR							
13...	1450	430	98	7.3	9.3	15	4.0
APR							
17...	1300	490	81	7.5	8.8	45	8.0
MAY							
22...	1430	185	112	8.0	15.8	15	1.0
JUN							
19...	1320	128	115	7.6	15.3	20	2.0
JUL							
10...	1410	118	120	7.8	16.7	15	3.0
AUG							
07...	1345	80	127	8.3	18.0	15	2.0
SEP							
05...	1355	137	118	7.5	15.0	40	4.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
25...	13.7	.36	.00	.030	.01	.03
NOV						
07...	11.5	.53	.01	.020	.00	.00
15...	12.7	.48	.01	.020	.03	.09
DEC						
05...	12.1	.55	.01	.030	.01	.03
JAN , 1979						
30...	13.5	.41	.02	.030	.00	.00
FEB						
21...	11.8	.54	.01	.030	.03	.09
MAR						
13...	11.3	.46	.02	.020	.01	.03
APR						
17...	11.8	.35	.01	.020	.01	.03
MAY						
22...	11.5	.55	.04	.020	.00	.00
JUN						
19...	10.3	.48	.02	.000	.00	.00
JUL						
10...	10.6	.42	.02	.020	.03	.09
AUG						
07...	12.1	.32	.00	.040	.00	.00
SEP						
05...	9.8	.39	.01	.020	.01	.03

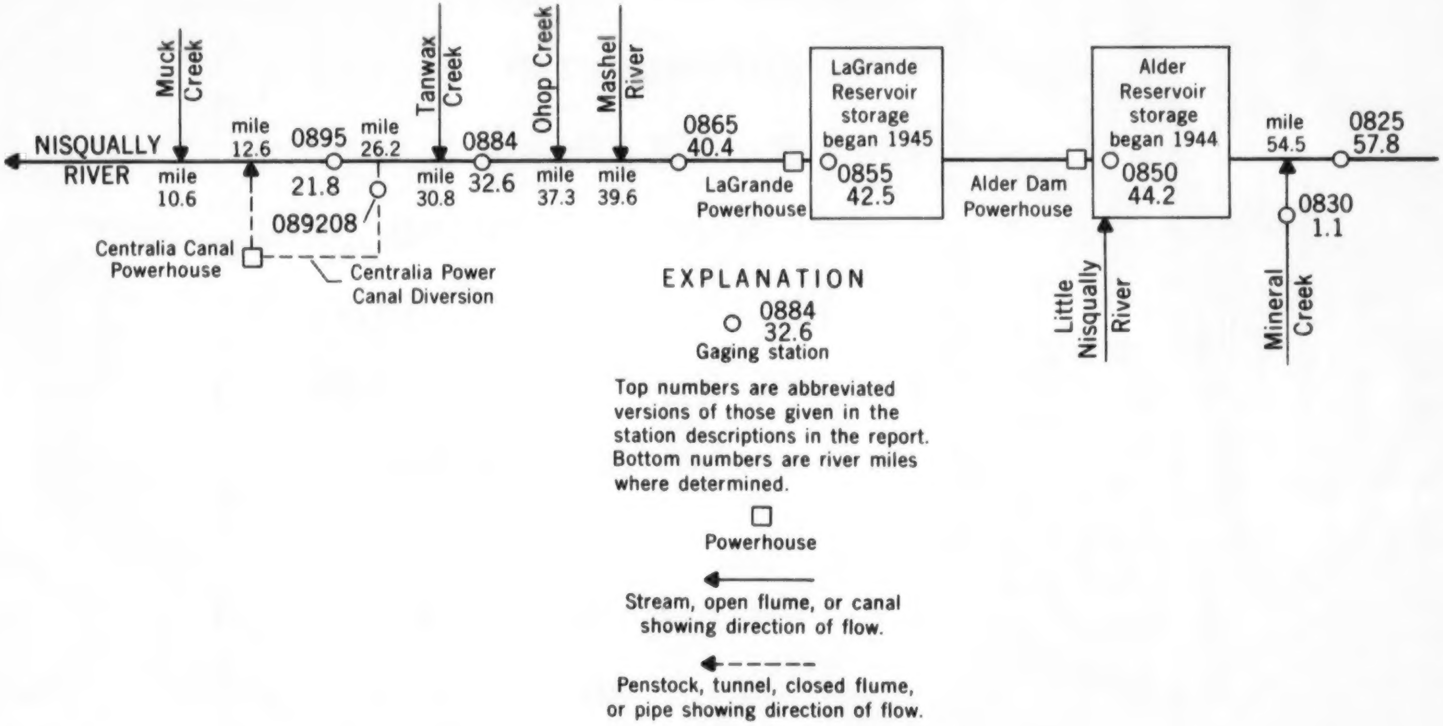
Muck Creek
Tanwax Creek
Ohop Creek
Mashel River
NISQUALLY RIVER
mile 10.6
mile 12.6
0895 21.8
mile 26.2
089208
Centralia Canal Powerhouse
Centralia Power Canal Diversion
mile 30.8
0884 32.6
mile 37.3
mile 39.6
0865 40.4
LaGrande Powerhouse
LaGrande Reservoir storage began 1945
0855 42.5
Alder Dam Powerhouse
Alder Reservoir storage began 1944
0850 44.2
Little Nisqually River
mile 54.5
0825 57.8
0830 1.1
Mineral Creek
EXPLANATION
0884 32.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 9. Gaging stations in Nisqually River basin.

12082500 NISQUALLY RIVER NEAR NATIONAL, WA

LOCATION.--Lat 46°45'10", long 122°04'57", in SW¼SW¼ sec.29, T.15 N., R.6 E., Pierce County, Hydrologic Unit 17110015, on right bank 100 ft (30 m) downstream from old railroad bridge, 1.2 mi (1.9 km) west of National, 3.3 mi (5.3 km) upstream from Mineral Creek, and at mile 57.8 (93.0 km).

DRAINAGE AREA.--133 mi² (344 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1942 to current year.

REVISED RECORDS.--WSP 1716: 1943(M), 1947(P), 1950-51, 1956(M). WRD Wash. 1974: 1968(M), 1969(M), 1972(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,450 ft (442 m), from river-profile map.

REMARKS.--Water-discharge records good except those for period Dec. 29 -Jan. 9, Jan. 30-Feb. 4, and Sept. 2-30, which are poor. Small diversions for domestic use. Slight regulation at low flow by powerplant of Mount Rainier National Park on Paradise River. Tacoma City Light radio telemeter at station.

AVERAGE DISCHARGE.--37 years, 781 ft³/s (22.12 m³/s) 79.74 in/yr (2,025 mm/yr), 565,800 acre-ft/yr (698 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft³/s (484 m³/s) Dec. 2, 1977, gage height, 11.96 ft (3.645 m), from rating curve extended above 8,000 ft³/s (227 m³/s) on basis of slope-area measurement at gage height 11.25 ft (3.429 m); minimum discharge, 108 ft³/s (3.06 m³/s) Dec. 1, 3, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,600 ft³/s (73.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	(m³/s)	Gage height (ft)	(m)
Mar. 7	0715	*2,790	79.0	*6.65	2.027

Minimum daily discharge, 200 ft³/s (5.66 m³/s) Feb. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	445	260	1010	330	215	485	475	1170	770	934	640	574
2	416	270	791	320	210	450	505	1090	974	728	610	640
3	430	450	889	310	205	450	470	1050	1130	622	604	622
4	415	805	1400	300	200	728	538	1230	1180	616	556	430
5	402	510	1070	290	302	1720	574	1460	1250	652	550	348
6	420	415	847	280	598	2430	610	1400	1090	676	532	326
7	420	430	707	275	1240	2500	598	1190	826	658	544	500
8	393	777	622	270	819	1700	598	1050	694	652	562	540
9	393	538	580	270	1010	1270	622	942	742	728	580	600
10	388	425	544	388	1100	1050	598	861	861	934	646	550
11	361	375	791	330	1030	966	610	812	974	742	652	470
12	326	348	670	306	1310	934	622	840	982	646	628	430
13	339	330	592	286	1570	882	763	910	868	568	628	450
14	388	310	610	274	1190	861	707	1050	688	574	598	500
15	411	298	562	266	926	1010	658	1170	622	646	544	580
16	411	366	510	254	770	1020	634	1220	598	770	634	560
17	397	445	485	246	700	896	622	1110	580	889	604	470
18	397	388	450	239	694	791	604	1100	550	974	520	540
19	379	379	415	258	610	714	574	1050	586	990	495	580
20	366	343	397	298	544	670	532	1070	598	868	475	540
21	298	330	402	370	500	646	520	1200	592	812	574	450
22	274	310	420	326	465	622	532	1300	592	676	580	410
23	278	294	415	302	450	616	562	1420	646	634	520	370
24	357	286	616	294	510	634	604	1300	714	634	470	390
25	314	278	544	278	628	634	640	1250	805	640	490	420
26	306	266	495	266	634	598	721	1310	833	670	526	400
27	270	318	465	266	604	574	910	1180	868	682	538	350
28	275	664	384	254	538	556	1120	966	896	646	510	410
29	290	604	370	243	---	520	1130	784	903	616	532	330
30	270	966	350	230	---	495	1180	676	896	634	562	310
31	260	---	340	220	---	475	---	664	---	670	505	---
TOTAL	11089	12778	18743	8839	19572	27897	19833	33825	24308	22181	17409	14090
MEAN	358	426	605	285	699	900	661	1091	810	716	562	470
MAX	445	966	1400	388	1570	2500	1180	1460	1250	990	652	640
MIN	260	260	340	220	200	450	470	664	550	568	470	310
CFSM	2.69	3.20	4.55	2.14	5.26	6.77	4.97	8.20	6.09	5.38	4.23	3.53
IN.	3.10	3.57	5.24	2.47	5.47	7.80	5.55	9.46	6.80	6.20	4.87	3.94
AC-FT	22000	25350	37180	17530	38820	55330	39340	67090	48210	44000	34530	27950

CAL YR 1978 TOTAL 215381 MEAN 590 MAX 1460 MIN 260 CFSM 4.44 IN 60.24 AC-FT 427200
WTR YR 1979 TOTAL 230564 MEAN 632 MAX 2500 MIN 200 CFSM 4.75 IN 64.49 AC-FT 457300

12082500 NISQUALLY RIVER NEAR NATIONAL, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1951 to current year.

INSTRUMENTATION.--Temperature recorder since October 1951.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Records represent water temperatures at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 18.5°C July 13, 1961, July 3, 1970; minimum, (1961-63, 1965-79), 0.0°C on many days during winter months of most years.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 18.0°C July 15, 20; minimum recorded, 0.0°C on many days during winter months.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.5	7.5	9.0	6.5	2.5	4.0	4.0	3.5	3.5	---	---	---
2	11.5	5.5	8.5	6.5	3.0	5.0	4.5	3.5	4.0	---	---	---
3	11.0	6.0	8.5	7.0	6.0	6.5	4.5	4.0	4.0	---	---	---
4	11.5	7.5	9.0	7.0	3.5	5.5	4.0	2.5	3.0	---	---	---
5	11.5	5.5	8.5	5.5	3.0	4.0	3.0	2.5	2.5	---	---	---
6	11.5	6.0	8.5	6.5	3.0	5.0	2.5	1.5	2.0	---	---	---
7	10.5	7.5	9.0	8.0	6.0	7.0	1.5	1.0	1.5	---	---	---
8	12.0	7.0	9.5	7.5	4.5	6.5	2.5	1.0	2.0	---	---	---
9	10.5	6.5	8.5	4.5	2.5	4.0	3.0	2.5	2.5	---	---	---
10	9.0	8.0	8.5	3.0	1.0	2.0	3.5	2.5	2.5	---	---	---
11	10.0	7.0	8.0	2.5	.0	1.0	3.0	2.5	3.0	---	---	---
12	9.5	5.5	7.0	2.5	.0	1.0	2.5	1.5	2.0	---	---	---
13	10.0	4.5	7.0	2.5	.0	1.0	2.0	1.0	1.5	---	---	---
14	10.5	5.5	8.0	3.0	.0	1.0	3.0	2.0	2.5	---	---	---
15	10.5	6.0	8.0	3.5	.5	2.0	3.0	2.0	2.5	---	---	---
16	8.5	7.0	7.5	4.0	3.5	3.5	2.5	1.5	2.0	---	---	---
17	9.5	7.5	8.0	4.5	3.5	4.0	3.0	2.0	2.5	---	---	---
18	10.5	6.0	8.0	4.0	2.5	3.5	3.0	1.5	2.0	---	---	---
19	10.0	5.0	7.5	2.0	.0	.5	1.5	.0	1.0	---	---	---
20	8.5	5.5	7.0	2.0	.0	1.0	2.5	1.0	2.0	---	---	---
21	7.5	4.0	5.5	3.0	.5	1.5	3.0	2.0	2.5	---	---	---
22	8.5	4.0	6.0	2.5	.5	1.5	3.0	2.0	2.5	---	---	---
23	9.0	4.5	7.0	3.0	1.5	2.5	3.5	2.5	3.0	---	---	---
24	8.5	6.0	7.5	4.0	2.5	3.0	3.5	2.5	3.0	---	---	---
25	7.0	3.5	5.5	3.5	2.0	3.0	2.5	1.5	1.5	---	---	---
26	7.0	3.0	5.0	3.0	1.5	2.0	1.5	1.0	1.0	---	---	---
27	8.0	4.5	6.0	3.5	1.0	2.5	1.0	.0	1.0	2.5	1.0	1.5
28	6.5	5.0	6.0	3.5	2.5	3.0	.0	.0	.0	1.5	.5	1.0
29	5.5	4.5	5.0	4.0	3.5	4.0	.0	.0	.0	.5	.0	.0
30	6.5	3.5	4.5	4.0	3.5	4.0	---	---	---	.0	.0	.0
31	6.0	2.0	4.0	---	---	---	---	---	---	.0	.0	.0
MONTH	12.0	2.0	7.5	8.0	.0	3.0	4.5	.0	2.0	2.5	.0	.5

12082500 NISQUALLY RIVER NEAR NATIONAL, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	.0	.0	.0	4.0	2.0	2.5	4.5	3.0	4.0	7.0	6.0	6.5
2	.0	.0	.0	5.0	1.5	3.0	4.5	3.0	4.0	7.0	5.5	6.5
3	.0	.0	.0	3.5	2.5	3.0	4.5	3.5	4.0	10.5	5.0	7.5
4	1.0	.0	.5	4.5	3.5	4.0	5.0	4.0	4.5	8.0	6.0	7.0
5	2.5	1.0	1.5	4.5	3.5	4.0	10.0	4.0	6.5	7.0	5.5	6.0
6	2.0	.5	1.0	4.5	3.5	4.0	6.5	4.5	5.5	7.5	5.0	6.0
7	3.0	1.0	1.5	5.5	3.5	4.5	8.0	3.5	5.5	8.0	5.0	6.0
8	3.5	2.0	2.5	5.5	2.5	4.0	6.0	4.5	5.5	9.0	5.0	7.0
9	3.5	2.5	3.0	6.5	2.5	4.0	6.0	4.0	5.0	8.0	6.0	7.0
10	3.5	2.5	3.0	6.5	3.0	4.5	6.0	3.5	5.0	9.0	5.5	7.0
11	4.0	3.0	3.5	7.0	3.5	5.0	6.0	3.5	4.5	11.5	5.5	9.0
12	3.5	3.0	3.5	7.0	4.0	5.0	6.0	4.0	5.0	10.5	5.5	8.0
13	4.0	2.5	3.5	7.0	3.0	5.0	6.0	4.0	5.0	13.5	6.5	9.5
14	4.0	2.0	2.5	7.0	3.5	5.0	7.0	4.0	5.5	13.0	6.0	9.0
15	3.0	1.5	2.0	5.5	4.5	5.0	7.0	4.5	5.5	12.0	6.0	8.5
16	3.5	2.0	2.5	5.5	4.0	4.5	6.0	4.5	5.5	10.5	6.5	8.0
17	3.5	2.0	3.0	6.0	3.5	4.5	6.5	4.5	5.5	11.5	5.5	8.5
18	4.0	3.0	3.5	6.5	3.5	5.0	6.0	4.0	5.0	11.0	7.0	8.5
19	3.0	2.0	2.5	7.0	3.0	5.0	7.5	4.0	5.5	12.5	5.5	8.5
20	3.5	1.5	2.5	7.5	3.5	5.0	9.0	4.0	6.5	13.0	5.5	9.0
21	3.0	2.0	2.5	7.0	3.0	5.0	9.5	4.5	7.0	13.0	6.0	9.5
22	4.5	2.0	3.0	8.0	3.0	5.0	8.5	4.5	6.5	13.0	6.0	9.5
23	3.5	2.0	2.5	8.5	3.0	5.5	9.5	5.5	7.0	10.0	7.0	8.5
24	3.0	2.0	2.5	7.5	3.5	5.5	10.0	5.5	7.5	12.0	7.0	9.0
25	4.5	3.0	3.5	6.0	3.5	4.5	11.0	5.0	8.0	13.5	6.0	9.5
26	4.5	3.5	4.0	6.5	3.5	5.0	12.0	5.0	8.5	9.5	6.5	8.0
27	4.0	2.5	3.5	5.5	4.5	5.0	11.0	5.5	8.0	7.5	5.5	6.5
28	3.5	2.0	2.5	6.0	4.5	5.0	8.0	6.0	7.0	8.0	5.0	6.0
29	---	---	---	5.5	3.5	4.5	11.0	5.5	8.0	8.0	5.5	7.0
30	---	---	---	5.5	3.5	4.5	10.5	5.5	7.5	13.5	4.5	8.5
31	---	---	---	4.5	3.5	4.0	---	---	---	14.5	6.5	10.0
MONTH	4.5	.0	2.5	8.5	1.5	4.5	12.0	3.0	6.0	14.5	4.5	8.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	15.0	7.0	11.0	8.0	6.5	7.0	16.5	8.0	12.0	10.5	9.0	9.5
2	15.5	7.0	11.0	11.5	6.5	8.5	16.5	8.0	12.0	10.0	8.5	9.5
3	14.5	7.0	10.5	14.5	6.5	10.5	15.0	8.5	11.0	11.0	9.0	10.0
4	13.0	7.5	10.0	14.0	9.0	11.0	16.0	6.0	10.5	12.0	8.5	10.0
5	11.5	7.0	8.5	16.5	8.5	12.0	15.5	7.0	11.0	11.5	8.5	10.0
6	9.0	5.5	7.0	14.0	8.5	11.0	16.0	7.5	11.0	15.0	8.5	11.5
7	11.5	5.5	8.0	13.0	8.5	10.5	16.5	7.0	11.0	17.0	9.0	12.5
8	14.5	6.0	9.5	14.0	8.5	11.0	16.5	6.5	11.0	12.0	8.5	10.0
9	15.5	7.0	11.0	15.0	9.0	11.5	17.0	6.5	11.5	13.0	8.5	10.0
10	15.5	7.5	11.5	11.0	8.5	9.5	17.0	7.5	11.5	14.5	7.0	10.5
11	15.0	7.5	10.5	11.5	8.0	9.5	16.0	7.0	11.0	15.0	8.0	11.0
12	13.5	6.5	9.5	12.0	8.5	10.0	16.5	6.5	11.0	15.5	7.5	11.0
13	11.5	6.5	8.5	15.5	8.0	11.5	10.5	7.5	9.0	15.5	7.5	11.0
14	11.5	6.5	8.5	16.5	8.0	12.0	10.0	7.5	8.5	15.5	8.5	11.5
15	10.5	6.5	8.5	18.0	8.5	13.0	17.0	7.0	11.0	11.0	8.0	9.5
16	11.0	7.5	9.0	17.5	9.0	13.0	14.0	8.5	11.0	13.5	8.5	10.5
17	10.0	7.5	8.5	17.5	9.0	12.5	12.5	8.5	10.0	14.5	6.5	10.0
18	9.5	8.0	8.5	17.0	8.5	12.0	10.5	7.5	9.0	14.5	7.0	10.0
19	10.5	7.5	8.5	17.0	8.0	12.0	11.0	8.0	9.5	14.0	7.5	10.0
20	14.0	7.0	10.0	18.0	8.0	12.5	14.5	8.0	11.0	14.0	8.5	10.5
21	10.0	7.0	8.5	12.5	9.0	10.5	12.5	9.0	10.0	---	---	---
22	15.0	7.0	10.5	14.5	8.0	10.5	14.0	8.5	11.0	---	---	---
23	15.5	7.0	11.0	16.5	8.0	12.0	14.0	8.0	10.5	---	---	---
24	16.5	7.0	11.5	17.5	8.5	12.5	16.5	7.5	11.5	---	---	---
25	16.0	7.5	11.5	17.5	7.5	12.0	15.5	7.5	11.5	---	---	---
26	15.5	7.0	11.0	17.5	8.0	12.0	17.0	7.5	11.5	---	---	---
27	15.5	7.5	11.0	17.0	7.5	12.0	14.0	8.0	10.5	---	---	---
28	16.0	8.0	11.5	14.0	8.0	10.5	15.0	8.5	11.0	---	---	---
29	11.0	8.0	9.0	16.0	6.5	11.0	13.5	8.5	11.0	---	---	---
30	8.5	7.0	8.0	17.0	7.0	11.5	10.0	8.5	9.0	---	---	---
31	---	---	---	17.5	7.5	12.0	15.0	8.5	11.0	---	---	---
MONTH	16.5	5.5	9.5	18.0	6.5	11.0	17.0	6.0	10.5	17.0	6.5	10.5
YEAR	18.0	.0	6.5									

12083000 MINERAL CREEK NEAR MINERAL, WA

LOCATION.--Lat 46°44'15", long 122°08'33", in NE¼SW¼ sec. 35, T.15 N., R.5 E., Lewis County, Hydrologic Unit 17110015, on right bank 0.5 mi (0.8 km) downstream from CMSTP&P Railroad bridge, 2.3 mi (3.7 km) northeast of Mineral, and at mile 1.1 (1.8 km).

DRAINAGE AREA.--75.2 mi^2 (194.8 km^2).

PERIOD OF RECORD.--June 1942 to current year.

REVISED RECORDS.--WSP 1932: Drainage area. WRD Wash. 1974, 1971(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,340 ft (408 m), from topographic map.

REMARKS.--Records excellent. No regulation or diversion above station.

AVERAGE DISCHARGE.--37 years, 375 ft^3/s (10.62 m^3/s) 67.72 in/yr (1,720 mm/yr) 271,700 acre-ft/yr (335 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,740 ft^3/s (276 m^3/s) Jan. 20, 1972, gage height, 10.87 ft (3.313 m); minimum, 16 ft^3/s (0.45 m^3/s) Aug. 30, 31, 1970; minimum gage height, 1.40 ft (0.427 m) Sept. 22, 23, 1950.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,700 ft^3/s (76.5 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Feb. 6	2245	*3,260	92.3	*9.06	2.761

Minimum discharge, 24 ft^3/s (0.68 m^3/s) Aug. 12, gage height, 3.15 ft (0.960 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	96	52	780	135	90	426	210	426	118	154	31	37
2	89	51	520	130	85	373	235	380	118	132	31	122
3	83	107	436	125	80	394	235	345	114	93	30	172
4	79	405	578	120	80	1090	220	405	110	79	30	110
5	76	195	488	115	302	2040	227	544	107	72	29	79
6	72	138	394	110	1060	1760	242	614	102	67	29	65
7	69	114	323	105	2120	1490	237	508	96	63	28	56
8	67	128	278	100	1030	1080	248	448	89	59	28	66
9	65	108	260	100	1350	805	278	405	84	57	27	108
10	65	98	263	207	1370	650	266	356	81	72	26	89
11	63	89	765	166	1260	564	272	320	80	67	26	73
12	61	81	552	148	1590	524	296	305	77	63	25	63
13	59	77	419	134	1630	480	569	296	76	57	25	56
14	57	74	452	126	1180	456	552	299	73	53	28	51
15	54	74	408	120	845	524	460	293	72	51	28	48
16	53	197	342	114	650	524	419	278	74	48	34	47
17	53	293	308	108	552	448	423	254	76	45	37	45
18	52	235	269	104	591	391	415	240	73	42	34	42
19	51	240	235	107	492	345	387	225	72	41	37	40
20	51	182	212	162	419	320	349	215	67	40	34	40
21	51	154	215	408	373	305	329	205	65	39	40	39
22	48	136	317	308	329	293	323	200	62	40	46	39
23	47	124	305	235	314	284	317	195	58	39	38	38
24	51	114	484	202	448	281	326	177	56	38	32	37
25	48	108	415	177	770	278	342	164	54	37	30	35
26	46	104	338	168	820	263	366	160	52	35	28	34
27	45	105	290	172	686	260	408	168	51	34	30	34
28	47	260	220	160	528	248	444	172	49	34	29	40
29	74	266	170	130	---	233	433	150	49	34	28	37
30	69	722	155	110	---	222	429	132	62	33	28	34
31	58	---	145	95	---	215	---	122	---	32	31	---
TOTAL	1899	5031	11336	4701	21044	17566	10257	9001	2317	1750	957	1776
MEAN	61.3	168	366	152	752	567	342	290	77.2	56.5	30.9	59.2
MAX	96	722	780	408	2120	2040	569	614	118	154	46	172
MIN	45	51	145	95	80	215	210	122	49	32	25	34
CFSM	.82	2.23	4.87	2.02	10.0	7.54	4.55	3.86	1.03	.75	.41	.79
IN.	.94	2.49	5.61	2.33	10.41	8.69	5.07	4.45	1.15	.87	.47	.88
AC-FT	3770	9980	22480	9320	41740	34840	20340	17850	4600	3470	1900	3520

CAL YR 1978 TOTAL 85305 MEAN 234 MAX 1140 MIN 30 CFSM 3.11 IN 42.20 AC-FT 169200
WTR YR 1979 TOTAL 87635 MEAN 240 MAX 2120 MIN 25 CFSM 3.19 IN 43.35 AC-FT 173800

12083400 NISQUALLY RIVER AT ELBE, WA

LOCATION.--Lat 46°45'47", long 122°11'27", in NW¼NW¼ sec.28, T.15 N., R.5 E., Pierce County, Hydrologic Unit 17110015, at State Highway 7 crossing, at Elbe and at mile 51.7 (83.2 km^2).

DRAINAGE AREA.--226 mi^2 (585 km^2).

PERIOD OF RECORD.--Water years 1973 to current year.

REMARKS.--Water discharge obtained by routing flow from upstream gaging stations; discharge value are fair.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978									
11...	1040	424	66	7.5	8.6	35	45	11.3	--
18...	0925	436	53	7.3	6.4	5	20	10.2	K7
NOV									
08...	0845	1050	42	7.5	7.6	5	30	11.1	20
08...	1030	1550	49	7.5	7.3	40	75	11.3	--
DEC									
06...	0940	1290	51	7.2	1.6	10	2.0	13.1	10
JAN , 1979									
12...	0910	458	61	7.4	2.4	--	2.0	12.5	5
FEB									
07...	0900	3700	38	7.5	2.2	--	40	12.8	14
MAR									
07...	0945	4340	37	7.8	4.8	10	25	12.9	4
APR									
12...	0925	852	56	7.4	4.2	10	1.0	12.2	4
MAY									
09...	0910	1370	46	7.1	6.4	10	2.0	11.7	1
JUN									
06...	0920	1260	39	7.2	6.6	10	35	11.5	10
JUL									
11...	0905	856	41	7.1	9.2	5	25	10.8	K23
AUG									
08...	0915	608	48	6.8	8.4	--	35	11.0	3
SEP									
12...	0900	500	57	7.2	7.2	10	20	10.9	5

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978									
11...	.02	.01	--	--	--	--	.050	.01	.03
18...	.02	.01	.09	.10	.12	.53	.050	.01	.03
NOV									
08...	.06	.01	.11	.12	.18	.80	.240	.00	.00
08...	.07	.01	--	--	--	--	.190	.00	.00
DEC									
06...	.23	.01	.12	.13	.36	1.6	.010	.01	.03
JAN , 1979									
12...	.18	.00	.13	.13	.31	1.4	.020	.00	.00
FEB									
07...	.49	.02	.34	.36	.85	3.8	.120	.00	.00
MAR									
07...	.17	.01	.12	.13	.30	1.3	.100	.06	.18
APR									
12...	.12	.01	.10	.11	.23	1.0	.010	.00	.00
MAY									
09...	.07	.00	.05	.05	.12	.53	.010	.00	.00
JUN									
06...	.05	.03	.00	.02	.07	.31	.090	.03	.09
JUL									
11...	.07	.02	.00	.00	.07	.31	.120	.01	.03
AUG									
08...	.02	.02	.00	.00	.02	.09	.070	.00	.00
SEP									
12...	.05	.02	.41	.43	.48	2.1	.040	.01	.03

12085000 ALDER RESERVOIR AT ALDER, WA

LOCATION.--Lat 46°48'09", long 122°18'37", in SE¼NW¼ sec.9, T.15 N., R.4 E., Thurston County, Hydrologic Unit 17110015, near left end of Alder Dam on Nisqually River, 1.0 mi (1.6 km) west of Alder, 1.7 mi (2.7 km) upstream from La Grande Dam, 4.6 mi (7.4 km) upstream from Mashel River, and at mile 44.2 (71.1 km).

DRAINAGE AREA.--286 mi² (741 km²).

WATER-CONTENTS RECORDS

PERIOD OF RECORD.--November 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft (2.32 m) National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to July 8, 1946, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete-arch dam; storage began Nov. 7, 1944; dam completed in 1945. Capacity, 99,170 acre-ft (122 hm³) between gage heights 1,114 ft (339.5 m), lower limit of operating range, and 1,177 ft (358.7 m), gage height of spillway. Water can be controlled by spillway gates to gage height 1,207 ft (367.9 m), usable capacity 179,600 acre-ft (221 hm³). Dead storage below gage height 1,114 ft (339.5 m), 52,110 acre-ft (64.3 hm³). Figures given herein represent total contents. Water is used by city of Tacoma for power production.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 233,848 acre-ft (288 hm³) Dec. 4, 1975, gage height 1,207.68 ft (368.101 m); minimum since reservoir first filled, 86,710 acre-ft (107 hm³), Mar. 26, 1969, gage height, 1,142.77 ft (348.316 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 225,430 acre-ft (278 hm³) May 7, gage height, 1,204.93 ft (367.263 m); minimum, 104,408 acre-ft (129 hm³) Feb. 5, gage height, 1,153.74 ft (351.660 m).

Capacity table (gage height, in feet, and total contents, in acre-feet)
(Based on project surveys and maps by city of Tacoma in 1944)

1,144	88,510	1,170	135,800	1,200	210,840
1,150	97,910	1,180	158,260	1,207.7	233,910
1,160	115,690	1,190	183,270		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	217540	190436	167360	137110	107696	179338	202507	218380	218980	212058	201521	182683
2	217000	189261	169154	134032	106287	179082	202449	219580	218800	212029	200912	183448
3	216350	188896	170627	131109	105417	178979	202478	220330	218620	211594	200274	184239
4	215694	190175	173869	128307	104495	182046	202884	221830	218920	211159	199781	184162
5	215161	189965	175839	125260	104616	191116	203290	223870	219310	210811	198826	183754
6	214494	189366	177114	122480	109791	199172	203841	225370	219160	210318	197954	182811
7	213827	188844	177293	121980	120824	205088	204479	225220	218680	209854	197084	182275
8	212986	188896	176885	121500	125820	208288	204885	224860	218200	209361	196250	181995
9	212290	188470	176298	120764	132484	209390	205845	223570	217510	209332	195392	181714
10	211420	187755	175788	121043	138775	209651	206398	223240	217150	209361	195017	181281
11	210637	186517	177318	120565	144511	209216	207183	223090	217000	209100	194615	180873
12	209709	185208	178109	120008	152828	208897	208230	223300	217000	208665	194213	180669
13	208752	183780	178211	119413	161474	209361	210115	223330	216880	207853	193838	180259
14	207940	182097	178390	118723	167185	208926	211449	223840	216321	207212	193360	180003
15	207242	180490	177603	117955	170576	209390	212029	224530	215712	206660	192779	179978
16	206369	179082	176477	117113	172285	209709	212689	225190	215074	206710	192594	179696
17	205670	178749	174970	116119	173741	209419	212957	225220	214523	206660	192226	179414
18	204856	178365	173229	115101	175865	208404	213479	225070	213769	206776	191538	179056
19	204044	177854	170984	114284	177318	207562	213450	224650	213421	206892	190906	179030
20	203087	175941	168011	113734	177369	205845	213276	224350	213160	207009	190018	178954
21	202130	173613	165435	114588	176630	205234	213044	224140	212609	207030	189498	178544
22	201057	171239	163059	114635	175354	205030	212783	224230	212174	206630	188922	177854
23	199897	168697	160658	114683	174040	204827	212464	224620	211855	206107	188168	176987
24	198882	166035	159082	114303	174125	204885	212261	224560	211681	205641	187342	176426
25	197867	163540	157254	113809	176171	205059	212261	224470	211652	205881	186491	175661
26	196881	160848	155174	113120	178237	204769	212464	224470	211507	204711	185794	174842
27	195874	159529	152758	112488	178928	204595	213210	224320	211420	204392	185055	173946
28	194802	160234	150061	111566	179184	204276	214639	223660	211391	203754	184341	173024
29	193784	160778	146928	110763	---	203986	215741	222520	211362	202942	183984	172055
30	192673	163465	143528	109703	---	203551	217120	221110	211536	202681	183525	171086
31	191564	---	140511	108676	---	203145	---	219730	---	202159	182913	---
MAX	217540	190436	178390	137110	179184	209709	217120	225370	219310	212058	201521	184239
MIN	191564	159529	140511	108676	104495	178979	202449	218380	211362	202159	182913	171086
†	1,193.21	1,182.39	1,172.23	1,156.19	1,188.40	1,197.35	1,202.16	1,203.03	1,200.24	1,197.01	1,189.86	1,185.23
‡	-26,546	-27,599	-23,454	-31,835	+70,508	+23,961	+13,975	+2,610	-8,194	-9,377	-19,246	-11,827

CAL YR 1978..........................‡ -14,291
WTR YR 1979..........................‡ -47,024

† Gage height, in feet, at end of month.
‡ Change of contents, in acre-feet.

12085800 ALDER RESERVOIR AT ALDER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978								
10...	1020	1.0	46	7.3	14.0	15	8.3	<1
10...	1035	20	48	7.2	13.8	10	8.3	<1
10...	1050	50	49	7.1	13.7	10	7.6	<1
10...	1100	100	49	7.0	13.4	15	8.5	<1
10...	1115	250	50	7.2	13.0	20	8.9	1
NOV								
08...	0950	1.0	57	7.4	11.7	15	11.2	<1
08...	1000	20	60	7.1	11.7	15	9.2	1
08...	1010	50	60	7.1	11.7	15	9.2	1
08...	1020	100	63	7.2	11.1	15	9.4	2
08...	1030	250	61	7.2	10.0	25	9.8	2
DEC								
06...	1010	1.0	51	6.6	7.2	10	10.3	2
06...	1020	20	52	7.0	7.3	10	9.8	<1
06...	1030	50	54	6.8	7.2	10	10.2	<1
06...	1040	100	51	7.0	6.6	8.0	10.6	<1
06...	1050	240	53	6.9	5.9	10	10.9	2
JAN , 1979								
12...	1110	1.0	54	7.4	2.2	8.0	12.0	<1
12...	1120	20	53	7.2	2.4	9.0	11.9	<1
12...	1125	50	53	7.3	2.5	9.0	11.8	<1
12...	1130	100	50	7.3	3.1	10	11.6	<1
12...	1140	220	50	7.4	3.6	10	11.3	<1
FEB								
07...	1025	1.0	55	--	1.8	5.0	12.1	<1
07...	1030	20	57	--	1.9	6.0	11.9	<1
07...	1035	50	53	--	2.2	6.0	11.8	<1
07...	1045	100	56	--	2.4	10	11.4	<1
07...	1050	220	58	--	2.1	35	11.1	2
MAR								
07...	0940	1.0	50	7.3	3.7	6.0	12.4	<1
07...	0950	20	50	7.3	3.5	6.0	12.6	<1
07...	0955	50	50	7.3	3.5	8.0	12.4	1
07...	1000	100	52	7.3	3.2	9.0	12.4	<1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
OCT , 1978								
10...	.01	.01	.29	.30	.31	1.4	.020	.01
10...	.02	.01	.33	.34	.36	1.6	.020	.02
10...	.02	.01	.27	.28	.30	1.3	.010	.01
10...	.02	.01	.24	.25	.27	1.2	.010	.01
10...	.02	.02	--	--	--	--	.020	--
NOV								
08...	.03	.01	.04	.05	.08	.40	.020	.00
08...	.03	.01	.02	.03	.06	.30	.010	.00
08...	.02	.01	.00	.00	.02	.09	.020	.00
08...	.02	.02	.01	.03	.05	.20	.020	.00
08...	.05	.01	.21	.22	.27	1.2	.040	.00
DEC								
06...	.05	.01	.03	.04	.09	.40	.020	.02
06...	.05	.02	.17	.19	.24	1.1	.010	.02
06...	.05	.01	.16	.17	.22	.97	.010	.02
06...	.05	.01	.34	.35	.40	1.8	.010	.02
06...	.17	.01	.19	.20	.37	1.6	.020	.03
JAN , 1979								
12...	.13	.01	.17	.18	.31	1.4	.030	.00
12...	.12	.01	.15	.16	.28	1.2	.020	.00
12...	.11	.01	.11	.12	.23	1.0	.020	.00
12...	.09	.01	.01	.02	.11	.49	.020	.00
12...	.12	.00	.05	.05	.17	.75	.030	.00
FEB								
07...	.13	.01	.04	.05	.18	.80	.010	.00
07...	.13	.01	.05	.06	.19	.84	.010	.00
07...	.12	.01	.05	.06	.18	.80	.010	.00
07...	.15	.01	.09	.10	.25	1.1	.010	.00
07...	.23	.03	.13	.16	.39	1.7	.010	.00
MAR								
07...	.15	.02	.13	.15	.30	1.3	.010	.01
07...	.15	.02	.13	.15	.30	1.3	.010	.01
07...	.23	.03	.13	.16	.39	1.7	.030	.01
07...	.25	.02	.13	.15	.40	1.8	.030	.01

12085000 ALDER RESERVOIR AT ALDER, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
MAR , 1979								
07...	1005	240	52	7.3	3.2	8.0	12.4	<1
APR								
12...	0935	1.0	42	7.6	8.0	2.0	12.0	<1
12...	0940	20	43	7.7	7.8	2.0	12.0	<1
12...	0950	50	41	7.6	7.8	2.0	11.9	<1
12...	0955	100	43	7.2	5.4	4.0	11.6	<1
12...	1000	240	48	7.2	4.8	4.0	11.2	<1
MAY								
09...	0925	1.0	51	7.2	12.1	1.0	10.8	1
09...	0930	20	51	7.1	10.1	1.0	11.3	<1
09...	0935	50	52	7.0	7.7	1.0	11.0	<1
09...	0940	100	52	6.8	6.6	2.0	11.0	<1
09...	0945	240	53	6.8	5.6	2.0	11.0	<1
JUN								
06...	1010	1.0	45	7.6	16.5	1.0	10.0	<1
06...	1020	20	45	7.6	14.6	2.0	11.1	<1
06...	1030	50	45	7.5	10.8	1.0	10.0	<1
06...	1035	100	45	7.4	8.8	1.0	10.0	<1
06...	1045	265	47	7.4	7.2	1.0	10.1	<1
JUL								
11...	0945	1.0	45	7.6	18.4	2.0	9.3	<1
11...	0955	20	45	7.5	18.1	2.0	9.4	<1
11...	1000	50	45	6.9	13.3	2.0	7.6	<1
11...	1010	100	45	6.7	11.5	1.0	8.0	<1
11...	1015	260	47	6.7	9.6	2.0	8.0	<1
AUG								
08...	0925	1.0	47	8.9	19.5	5.0	9.5	<1
08...	0935	20	47	7.8	18.2	11	8.0	<1
08...	0940	50	47	7.2	15.0	7.0	6.9	<1
08...	0945	100	48	7.0	13.2	2.0	6.0	<1
08...	0950	250	48	7.0	11.6	6.0	7.0	<1
SEP								
12...	0935	1.0	45	7.4	16.9	8.0	8.2	<2
12...	0940	20	45	7.4	16.8	9.0	8.2	<2

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
MAR , 1979								
07...	.28	.03	.12	.15	.43	1.9	.030	.01
APR								
12...	.13	.01	.13	.14	.27	1.2	.010	.00
12...	.12	.02	.15	.17	.29	1.3	.010	.00
12...	.12	.01	.13	.14	.26	1.2	.010	.00
12...	.22	.01	.10	.11	.33	1.5	.010	.01
12...	.29	.01	.15	.16	.45	2.0	.010	.00
MAY								
09...	.07	.01	.07	.08	.15	.66	.010	.00
09...	.09	.01	.05	.06	.15	.66	.000	.00
09...	.11	.03	.05	.08	.19	.84	.000	.00
09...	.14	.01	.05	.06	.20	.89	.000	.00
09...	.14	.01	.05	.06	.20	.89	.000	.00
JUN								
06...	.02	.02	.04	.06	.08	.35	.020	.00
06...	.02	.02	.10	.12	.14	.62	.010	.00
06...	.05	.04	.02	.06	.11	.49	.010	.00
06...	.10	.07	.00	.05	.15	.70	.010	.00
06...	.11	.03	.00	.01	.12	.53	.010	.00
JUL								
11...	.07	.03	.09	.12	.19	.84	.010	.03
11...	.05	.02	.18	.20	.25	1.1	.010	.00
11...	.05	.01	.00	.00	.05	.22	.020	.03
11...	.07	.01	.00	.00	.07	.31	.000	.01
11...	.09	.01	.05	.06	.15	.66	.010	.01
AUG								
08...	.01	.00	.08	.08	.09	.40	.010	.00
08...	.01	.01	.05	.06	.07	.31	.020	.00
08...	.01	.01	.03	.04	.05	.22	.010	.00
08...	.00	.00	.00	.00	.00	.00	.010	.03
08...	.02	.00	.00	.00	.02	.09	.010	.01
SEP								
12...	.01	.01	.47	.48	.49	2.2	.020	.01
12...	.01	.01	.50	.51	.52	2.3	.020	.01

12085000 ALDER RESERVOIR AT ALDER, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
SEP , 1979								
12...	0950	50	45	7.0	15.3	30	7.4	<2
12...	1000	100	45	6.9	14.5	15	6.4	<2
12...	1010	250	48	6.8	13.7	40	6.5	<2

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
SEP , 1979								
12...	.02	.01	.51	.52	.54	2.4	.040	.01
12...	.02	.01	.44	.45	.47	2.1	.030	.01
12...	.04	.03	.39	.42	.46	2.0	.070	.03

12085500 LA GRANDE RESERVOIR AT LA GRANDE, WA

LOCATION.--Lat 46°49'25", long 122°18'13", in SW¼SE¼ sec.33, T.16 N., R.4 E., Thurston County, Hydrologic Unit 1710015, at left end of gate control structure, 1.1 mi (1.8 km) southeast of La Grande, 1.7 mi (2.7 km) downstream from Alder Dam, and at mile 42.5 (68.4 km).

DRAINAGE AREA.--289 mi² (749 km²).

WATER-CONTENTS RECORDS

PERIOD OF RECORD.--January 1945 to current year. January 1945 to September 1951 included in combined adjustment to monthly flow of Nisqually River at La Grande. Monthend contents January 1945 to September 1950, published in WSP 1316.

GAGE.--Water-stage recorder. Datum of gage is 7.61 ft (2.320 m) below National Geodetic Vertical Datum of 1929 (levels by city of Tacoma). Prior to June 12, 1947, monthend gage heights furnished by city of Tacoma from temporary gages in pool above dam.

REMARKS.--Reservoir is formed by concrete gravity dam completed in 1944; storage began in February 1945. Usable storage, 1,053 acre-ft (1.30 hm³) between gage heights 910 ft (277.4 m), minimum practical head, and 935 ft (285.0 m), normal reservoir level. Dead storage below gage height 910 ft (277.4 m), 1,629 acre-ft (2.01 hm³). Figures given herein represent total contents. Water used by city of Tacoma for power production.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,760 acre-ft (3.40 hm³), May 14, 1950, gage height, 936.4 ft (285.41 m); minimum observed since reservoir first filled, 1,370 acre-ft (1.69 hm³) Aug. 24, 1956, gage height, 900.0 ft (274.32 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,676 acre-ft (3.30 hm³) Jan. 8, gage height, 934.90 ft (284.958 m); minimum contents, 1,989 acre-ft (2.45 hm³) Mar. 20; gage height, 920.52 ft (280.574 m).

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	931.04	2,470	---
Oct. 31	930.55	2,445	-25
Nov. 30	931.69	2,504	+59
Dec. 31	927.33	2,286	-218
CAL YR 1978	---	---	-222
Jan. 31	929.73	2,404	+118
Feb. 28	930.33	2,434	+30
Mar. 31	926.45	2,244	-190
Apr. 30	929.81	2,408	+164
May 31	931.50	2,494	+86
June 30	929.67	2,400	-94
July 31	928.58	2,346	-54
Aug. 31	932.00	2,520	+174
Sept.30	927.86	2,311	-209
WTR YR 1979	---	---	-159

12085500 LA GRANDE RESERVOIR AT LA GRANDE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1977 to current year.

REMARKS.--Descriptive location given is for reservoir outlet. Samples taken elsewhere within reservoir body.

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978								
18...	1015	1.0	52	6.9	13.0	20	9.5	K2
18...	1030	20	51	7.0	13.0	15	9.4	<1
18...	1050	50	52	7.0	13.0	20	9.5	--
NOV								
08...	0945	1.0	51	7.2	10.8	20	10.0	3
08...	0950	20	50	7.2	10.7	25	10.2	K10
08...	0955	50	50	7.2	10.6	30	10.0	K10
DEC								
06...	1015	1.0	54	7.2	6.1	10	11.3	6
06...	1025	20	54	7.2	6.1	10	11.2	3
06...	1035	50	54	7.2	6.0	10	11.3	5
JAN , 1979								
12...	1000	1.0	46	7.3	3.7	10	11.9	3
12...	1020	20	58	7.3	3.7	10	12.0	2
12...	1040	50	58	7.4	3.7	10	12.0	2
FEB								
07...	1000	1.0	64	6.9	2.8	8.0	12.0	2
07...	1010	20	64	6.9	2.8	8.0	11.7	8
07...	1025	50	65	7.0	2.8	8.0	11.4	3
MAR								
07...	1045	1.0	53	7.3	4.0	9.0	13.2	<1
07...	1115	20	54	7.4	3.8	9.0	13.3	5
07...	1145	50	53	7.3	3.8	9.0	13.3	<1
APR								
12...	1010	1.0	49	7.1	4.8	4.0	12.4	<1
12...	1040	20	49	7.1	4.8	3.0	12.4	3
12...	1100	50	49	7.1	4.8	5.0	12.2	1
MAY								
09...	1000	1.0	50	7.3	6.1	2.0	11.3	<1
09...	1020	20	49	7.3	6.4	2.0	11.7	<1
09...	1045	50	50	7.3	6.0	2.0	11.5	<1
JUN								
06...	1010	1.0	48	7.1	8.3	1.0	11.4	1
06...	1025	20	49	7.0	7.6	1.0	11.5	2

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
OCT , 1978								
18...	.02	.01	.27	.28	.30	1.3	.020	.01
18...	.02	.01	.14	.15	.17	.75	.010	.02
18...	.02	.01	.19	.20	.22	.97	.020	.02
NOV								
08...	.03	.01	.15	.16	.19	.84	.030	.00
08...	.05	.01	.14	.15	.20	.89	.050	.00
08...	.06	.04	.04	.08	.14	.62	.060	.00
DEC								
06...	.11	.01	.14	.15	.26	1.2	.020	.03
06...	.12	.02	.09	.11	.23	1.0	.020	.02
06...	.12	.01	.06	.07	.19	.84	.020	.01
JAN , 1979								
12...	.10	.01	.05	.06	.16	.71	.030	.00
12...	.09	.01	.13	.14	.23	1.0	.030	.00
12...	.09	.01	.04	.05	.14	.62	.030	.00
FEB								
07...	.17	.02	.11	.13	.30	1.3	.010	.00
07...	.16	.03	.10	.13	.29	1.3	.010	.00
07...	.17	.03	.06	.09	.26	1.2	.010	.00
MAR								
07...	.25	.03	.15	.18	.43	1.9	.030	.01
07...	.25	.02	.19	.21	.46	2.0	.040	.01
07...	.25	.02	.18	.20	.45	2.0	.030	.01
APR								
12...	.27	.01	.15	.16	.43	1.9	.010	.00
12...	.26	.01	.10	.11	.37	1.6	.010	.02
12...	.27	.01	.12	.13	.40	1.8	.010	.00
MAY								
09...	.14	.01	.05	.06	.20	.89	.000	.00
09...	.14	.01	.01	.02	.16	.71	.000	.00
09...	.14	.01	.05	.06	.20	.89	.000	.00
JUN								
06...	.12	.03	.01	.04	.16	.71	.010	.00
06...	.12	.03	.02	.05	.17	.75	.000	.00

12085500 LA GRANDE RESERVOIR AT LA GRANDE, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMP-LING DEPTH (FT)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
JUN , 1979								
06...	1045	50	48	7.1	7.6	1.0	11.5	3
JUL								
11...	1035	1.0	47	6.7	11[illegible]	2.0	9.6	<1
11...	1100	20	47	6.7	10.4	1.0	9.6	1
11...	1115	50	46	6.8	10.1	2.0	9.5	<1
AUG								
08...	1005	1.0	46	6.9	12.9	5.0	8.7	<1
08...	1020	20	46	6.7	12.2	5.0	8.5	<1
08...	1040	50	46	6.7	12.1	5.0	8.3	<1
SEP								
12...	0950	1.0	46	7.1	14.1	25	8.4	2
12...	1010	20	47	6.9	14.1	25	8.2	2
12...	1035	50	47	6.9	14.0	20	8.1	8

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
JUN , 1979								
06...	.12	.02	.02	.04	.16	.71	.010	.00
JUL								
11...	.09	.02	.04	.06	.15	.66	.000	.00
11...	.10	.03	.00	.00	.10	.44	.000	.01
11...	.10	.02	.00	.00	.10	.44	.010	.00
AUG								
08...	.02	.00	.04	.04	.06	.27	.010	.01
08...	.03	.01	.01	.02	.05	.22	.010	.00
08...	.02	.00	.02	.02	.04	.18	.010	.00
SEP								
12...	.03	.03	.39	.42	.45	2.0	.040	.01
12...	.04	.05	.38	.43	.47	2.1	.040	.01
12...	.03	.11	.48	.59	.62	2.7	.040	.01

12086500 NISQUALLY RIVER AT LA GRANDE, WA

LOCATION.--Lat 46°50'25", long 122°19'38", in NW¼SE¼ sec.29, T.16 N., R.4 E., Pierce County, Hydrologic Unit 17110015, on right bank 0.4 mi (0.6 km) downstream from city of Tacoma powerplant, 0.6 mi (1.0 km) northwest of La Grande, 0.8 mi (1.3 km) upstream from Mashel River, and at mile 40.4 (65.0 km).

DRAINAGE AREA.--292 mi² (756 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1906 to October 1911, November to December 1911 (gage heights only), October 1919 to September 1931, October 1943 to current year. Monthly discharge only for some periods, published in WSP 1316. Published as "below Little Nisqually River, near La Grande" September 1906 to October 1911, and as "near La Grande" November to December 1911 and October 1919 to September 1931.

REVISED RECORDS.--WSP 1216: Drainage area. WSP 1316: 1927-28(M), 1949-50. WRD Wash. 1974: 1956(M). 1959-61(M), 1965.

GAGE.--Water-stage recorder. Altitude of gage is 490 ft (149 m), from river-profile map. See WSP 1932 for history of changes prior to Feb. 8, 1945.

REMARKS.--Water-discharge records excellent. No gage-height record Oct. 25-31 and May 21-25, discharge estimated. Flow regulated by city of Tacoma powerplant at La Grande since December 1943, by Alder Reservoir (see sta 12085000) since November 1944, and by La Grande Reservoir (see preceding page) since February 1945. All diversions returned to river above gage. Tacoma City Light radio telemeter at station.

AVERAGE DISCHARGE.--53 years (water years 1907-11, 1920-31, 1944-79), 1,431 ft³/s (40.53 m³/s) 66.55 in/yr (1,690 mm/yr), 1,037,000 acre-ft/yr (1,280 hm³/yr), adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,100 ft³/s (767 m³/s) Dec. 4, 1975, gage height, 11.90 ft (3.627 m); practically no flow on many occasions at site "near La Grande" (which excluded diversion) as a result of regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,920 ft³/s (82.7 m³/s) Jan. 6, gage height, 5.02 ft (1.530 m); minimum, 257 ft³/s (7.28 m³/s) Jan. 6, gage height, 2.65 ft (0.808 m), as a result of regulation; minimum daily discharge, 494 ft³/s (14.0 m³/s) Feb. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	918	927	1030	2230	990	1460	1240	1320	1480	1070	1080	909
2	918	981	1020	2250	1050	1460	1180	1320	1410	1070	1080	909
3	909	1040	1010	2090	945	1470	1010	1320	1400	1070	1080	909
4	909	1040	1010	1990	945	1460	882	1440	1400	1070	1080	909
5	909	1040	1010	1990	954	1470	855	1580	1380	1070	1090	945
6	918	1030	1010	1780	819	1540	855	1930	1370	1070	1090	1010
7	918	1040	1220	729	494	2090	855	2250	1300	1070	1100	1000
8	909	1040	1360	900	518	2190	855	2220	1250	1070	1120	1010
9	918	1040	1350	801	510	2230	873	2250	1240	1070	1090	1010
10	918	1050	1350	855	510	2120	918	1930	1240	1060	1020	963
11	909	1170	1360	918	510	2120	927	1520	1240	1070	990	810
12	918	1170	1350	936	518	2010	927	1390	1200	1070	990	686
13	918	1290	1360	936	575	1810	1090	1390	1150	1060	972	801
14	918	1360	1360	945	567	1820	1400	1390	1150	1060	972	801
15	918	1370	1590	945	927	1810	1390	1390	1150	1060	981	810
16	918	1360	1760	945	1280	1930	1380	1470	1150	1070	1010	810
17	918	1240	1750	945	1320	1980	1390	1630	1080	1080	1030	810
18	918	1170	1760	936	1160	1980	1390	1690	1030	1080	1040	810
19	918	1210	1960	936	1140	1970	1470	1690	1000	1070	1040	810
20	918	1610	2150	945	1540	1920	1420	1690	963	1070	1070	810
21	918	1760	2160	954	1820	1670	1390	1700	972	1080	1080	900
22	918	1760	2180	954	1820	1330	1390	1700	972	1080	1060	1000
23	918	1760	2220	954	1760	1220	1390	1700	972	1080	1040	990
24	918	1760	2200	954	1730	1220	1390	1700	972	1080	1040	990
25	927	1760	2200	954	1470	1230	1390	1700	972	1080	1040	1000
26	930	1760	2200	945	1610	1220	1370	1700	1030	1080	1040	990
27	930	1320	2220	945	1810	1230	1320	1700	1070	1080	1050	990
28	930	1030	2200	945	1740	1230	1330	1700	1070	1080	1000	990
29	930	1010	2200	954	---	1230	1320	1700	1070	1080	927	990
30	930	1030	2220	945	---	1230	1320	1690	1070	1080	873	990
31	930	---	2230	954	---	1240	---	1620	---	1090	882	---
TOTAL	28494	38128	52000	35460	31032	50890	35917	51420	34753	33290	31957	27362
MEAN	919	1271	1677	1144	1108	1642	1197	1659	1158	1074	1031	912
MAX	930	1760	2230	2250	1820	2230	1470	2250	1480	1090	1120	1010
MIN	909	927	1010	729	494	1220	855	1320	963	1060	873	686
AC-FT	56520	75630	103100	70330	61550	100900	71240	102000	68930	66030	63390	54270
†	-26,571	-27,540	-23,672	-31,717	+70,538	+23,771	+14,139	+2,696	[illegible]8,288	-9,431	-19,072	-12,036
MEAN‡	487	808	1,292	628	2,379	2,028	1,435	1,702	1,019	920	721	710
CFSM‡	1.67	2.77	4.42	2.15	8.15	6.95	4.91	5.83	3.49	3.15	2.47	2.43
IN.‡	1.92	3.09	5.10	2.48	8.48	8.01	5.48	6.72	3.89	3.63	2.85	2.71
AC-FT‡	29,950	48,090	79,430	38,610	132,100	124,700	85,380	104,700	60,640	56,600	44,320	42,230

CAL YR 1978: TOTAL 406,122 MEAN 1,113 MAX 2,370 MIN 398 AC-FT 805,500
DO.....: MEAN‡ 1,093 CFSM‡ 3.74 IN.‡ 50.79 AC-FT‡ 791,000
WTR YR 1979: TOTAL 450,703 MEAN 1,235 MAX 2,250 MIN 494 AC-FT 894,000
DO......: MEAN‡ 1,170 CFSM‡ 4.01 IN.‡ 54.37 AC-FT‡ 846,800

† Change in contents, in acre-feet, in Alder and La Grande Reservoirs.
‡ Adjusted for change in reservoir contents.

12086500 NISQUALLY RIVER AT LA GRANDE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1965 to current year.

INSTRUMENTATION.--Temperature recorder since 1965.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Records represent water temperatures at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 15.0°C Sept. 23-30, 1979; minimum, 2.0°C Jan. 19-21, 1972, Jan. 23, 24, 27-31, 1973, Dec. 21, 22, 30, 1974.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 15.0°C Sept. 23-30; minimum recorded, 2.5°C Feb. 13-18.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978								
18...	1130	918	52	7.0	13.0	20	10.9	1
NOV								
08...	1050	1050	51	7.2	10.6	25	10.5	6
DEC								
06...	1100	1010	54	7.3	6.1	10	12.0	2
JAN , 1979								
12...	1145	945	51	7.4	4.0	10	12.8	5
FEB								
07...	1105	494	66	7.1	3.2	15	13.4	--
MAR								
07...	1100	2190	54	7.3	4.2	8.0	13.3	1
APR								
12...	1200	936	49	7.3	5.4	4.0	13.3	<1
MAY								
09...	1125	2260	50	7.3	6.2	2.0	12.0	<1
JUN								
06...	1135	1370	49	7.0	8.0	1.0	11.9	5
JUL								
11...	1210	1080	48	6.8	9.4	1.0	10.5	3
AUG								
08...	1140	1130	47	6.9	12.6	5.0	9.7	1
SEP								
12...	1130	652	49	7.1	14.4	20	9.3	<2

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT , 1978								
18...	.02	.01	.18	.19	.21	.93	.010	.01
NOV								
08...	.05	.01	.13	.14	.19	.84	.040	.00
DEC								
06...	.12	.01	.11	.12	.24	1.1	.030	.01
JAN , 1979								
12...	.10	.01	.04	.05	.15	.66	.030	.00
FEB								
07...	.26	.02	.13	.15	.41	1.8	.020	.00
MAR								
07...	.25	.02	.12	.14	.39	1.7	.030	.01
APR								
12...	.27	.01	.11	.12	.39	1.7	.010	.00
MAY								
09...	.14	.01	.04	.05	.19	.84	.000	.00
JUN								
06...	.12	.02	.02	.04	.16	.71	.010	.00
JUL								
11...	.10	.02	.00	.01	.11	.49	.000	.00
AUG								
08...	.02	.00	.04	.04	.06	.27	.010	.00
SEP								
12...	.04	.01	.42	.43	.47	2.1	.040	.01

12086500 NISQUALLY RIVER AT LA GRANDE, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.0	13.0	13.0	11.5	11.5	11.5	6.5	6.5	6.5	4.5	4.5	4.5
2	13.0	13.0	13.0	11.5	11.5	11.5	6.5	6.5	6.5	4.5	4.0	4.0
3	13.0	12.5	13.0	11.5	11.0	11.5	6.5	6.5	6.5	4.0	4.0	4.0
4	13.0	13.0	13.0	11.0	11.0	11.0	6.5	6.0	6.5	4.0	4.0	4.0
5	13.0	13.0	13.0	11.0	11.0	11.0	6.0	6.0	6.0	4.0	3.5	3.5
6	13.0	13.0	13.0	11.0	10.5	11.0	6.0	6.0	6.0	---	---	---
7	13.0	13.0	13.0	11.0	10.5	10.5	6.0	6.0	6.0	---	---	---
8	13.0	13.0	13.0	10.5	10.0	10.5	6.0	6.0	6.0	---	---	---
9	13.5	13.0	13.0	10.0	10.0	10.0	6.0	6.0	6.0	---	---	---
10	13.0	13.0	13.0	10.0	9.5	9.5	6.0	5.5	5.5	---	---	---
11	13.0	13.0	13.0	9.5	9.5	9.5	5.5	5.5	5.5	---	---	---
12	13.0	13.0	13.0	9.5	9.5	9.5	5.5	5.5	5.5	---	---	---
13	13.0	13.0	13.0	9.5	9.5	9.5	5.5	5.5	5.5	---	---	---
14	13.0	13.0	13.0	9.5	9.0	9.0	5.5	5.0	5.5	---	---	---
15	13.0	13.0	13.0	9.0	8.5	9.0	5.0	5.0	5.0	---	---	---
16	13.0	13.0	13.0	8.5	8.5	8.5	5.0	5.0	5.0	---	---	---
17	13.0	13.0	13.0	8.5	8.5	8.5	5.5	5.0	5.5	---	---	---
18	13.0	13.0	13.0	8.5	8.0	8.5	5.5	5.5	5.5	---	---	---
19	13.0	12.5	12.5	8.0	8.0	8.0	5.5	5.5	5.5	---	---	---
20	13.0	12.5	12.5	8.0	8.0	8.0	5.5	5.5	5.5	---	---	---
21	12.5	12.5	12.5	8.0	8.0	8.0	5.5	5.5	5.5	---	---	---
22	12.5	12.5	12.5	8.0	8.0	8.0	5.5	5.0	5.0	---	---	---
23	12.5	12.5	12.5	8.0	7.5	8.0	5.0	5.0	5.0	---	---	---
24	12.5	12.5	12.5	7.5	7.0	7.5	5.0	5.0	5.0	---	---	---
25	12.5	12.5	12.5	7.0	7.0	7.0	5.0	4.5	5.0	---	---	---
26	12.5	12.0	12.5	7.0	6.5	7.0	4.5	4.5	4.5	---	---	---
27	12.5	12.0	12.5	6.5	6.5	6.5	4.5	4.5	4.5	---	---	---
28	12.0	12.0	12.0	6.5	6.5	6.5	4.5	4.5	4.5	---	---	---
29	12.0	12.0	12.0	6.5	6.5	6.5	4.5	4.0	4.0	---	---	---
30	12.0	11.5	11.5	6.5	6.5	6.5	4.5	4.0	4.0	---	---	---
31	11.5	11.5	11.5	---	---	---	4.5	4.5	4.5	---	---	---
MONTH	13.5	11.5	12.5	11.5	6.5	9.0	6.5	4.0	5.5	4.5	3.5	4.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	3.5	3.5	3.5	4.5	4.5	4.5	6.0	6.0	6.0
2	---	---	---	3.5	3.5	3.5	4.5	4.5	4.5	6.0	6.0	6.0
3	---	---	---	3.5	3.5	3.5	4.5	4.5	4.5	6.0	6.0	6.0
4	---	---	---	3.5	3.5	3.5	4.5	4.5	4.5	6.0	6.0	6.0
5	---	---	---	3.5	3.5	3.5	5.0	4.5	4.5	6.0	6.0	6.0
6	---	---	---	3.5	3.5	3.5	5.0	5.0	5.0	6.0	6.0	6.0
7	3.5	3.0	3.5	3.5	3.5	3.5	5.0	5.0	5.0	6.0	6.0	6.0
8	3.5	3.5	3.5	3.5	3.5	3.5	5.0	5.0	5.0	6.5	6.0	6.0
9	3.5	3.0	3.0	4.0	3.5	4.0	5.0	5.0	5.0	6.5	6.0	6.5
10	3.0	3.0	3.0	4.0	4.0	4.0	5.0	5.0	5.0	6.5	6.5	6.5
11	3.0	3.0	3.0	4.0	4.0	4.0	5.0	5.0	5.0	6.5	6.5	6.5
12	3.0	3.0	3.0	4.0	4.0	4.0	5.0	5.0	5.0	6.5	6.5	6.5
13	3.0	2.5	3.0	4.0	4.0	4.0	5.0	5.0	5.0	7.0	6.5	6.5
14	2.5	2.5	2.5	4.5	4.0	4.0	5.0	5.0	5.0	7.0	6.5	7.0
15	2.5	2.5	2.5	4.5	4.0	4.5	5.0	5.0	5.0	7.0	6.5	7.0
16	2.5	2.5	2.5	4.0	4.0	4.0	5.0	5.0	5.0	7.0	7.0	7.0
17	2.5	2.5	2.5	4.0	4.0	4.0	5.0	5.0	5.0	7.0	7.0	7.0
18	3.0	2.5	3.0	4.0	4.0	4.0	5.0	5.0	5.0	7.0	7.0	7.0
19	3.0	3.0	3.0	4.0	4.0	4.0	5.0	5.0	5.0	7.0	7.0	7.0
20	3.0	3.0	3.0	4.5	4.0	4.0	5.5	5.0	5.5	7.0	7.0	7.0
21	3.0	3.0	3.0	4.5	4.5	4.5	5.5	5.5	5.5	7.0	7.0	7.0
22	3.0	3.0	3.0	4.5	4.5	4.5	5.5	5.5	5.5	7.5	7.0	7.0
23	3.0	3.0	3.0	4.5	4.5	4.5	5.5	5.5	5.5	7.0	7.0	7.0
24	3.0	3.0	3.0	4.5	4.5	4.5	5.5	5.5	5.5	7.5	7.0	7.0
25	3.5	3.0	3.5	4.5	4.5	4.5	5.5	5.5	5.5	7.5	7.0	7.5
26	3.5	3.5	3.5	4.5	4.5	4.5	6.0	5.5	5.5	7.5	7.0	7.5
27	3.5	3.5	3.5	4.5	4.5	4.5	6.0	5.5	5.5	7.5	7.5	7.5
28	3.5	3.5	3.5	4.5	4.5	4.5	6.0	5.5	5.5	7.5	7.0	7.5
29	---	---	---	4.5	4.5	4.5	6.0	5.5	5.5	7.5	7.5	7.5
30	---	---	---	4.5	4.5	4.5	6.0	6.0	6.0	7.5	7.5	7.5
31	---	---	---	4.5	4.5	4.5	---	---	---	8.0	7.5	7.5
MONTH	3.5	2.5	3.0	4.5	3.5	4.0	6.0	4.5	5.0	8.0	6.0	7.0

12086500 NISQUALLY RIVER AT LA GRANDE, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.0	7.5	7.5	9.5	9.5	9.5	12.0	12.0	12.0	14.0	14.0	14.0
2	8.0	8.0	8.0	10.0	9.5	9.5	12.0	12.0	12.0	13.5	13.5	13.5
3	8.0	8.0	8.0	10.0	9.5	9.5	12.5	12.0	12.0	14.0	13.5	13.5
4	8.0	8.0	8.0	10.0	9.5	9.5	12.5	12.0	12.0	14.0	13.5	14.0
5	8.0	8.0	8.0	10.0	10.0	10.0	12.5	12.0	12.5	14.0	14.0	14.0
6	8.0	8.0	8.0	10.0	10.0	10.0	12.5	12.5	12.5	14.5	14.0	14.0
7	8.0	8.0	8.0	10.0	10.0	10.0	12.5	12.5	12.5	14.5	14.0	14.5
8	8.0	8.0	8.0	10.5	10.0	10.0	12.5	12.5	12.5	14.5	14.0	14.5
9	8.5	8.0	8.5	10.5	10.5	10.5	13.0	12.5	12.5	14.0	14.0	14.0
10	8.5	8.5	8.5	11.0	10.5	10.5	12.5	12.5	12.5	14.0	14.0	14.0
11	8.5	8.5	8.5	10.5	10.5	10.5	13.0	12.5	12.5	14.5	14.0	14.0
12	8.5	8.5	8.5	10.5	10.5	10.5	13.0	12.5	13.0	14.5	14.0	14.5
13	8.5	8.5	8.5	10.5	10.5	10.5	13.0	12.5	12.5	14.5	14.5	14.5
14	8.5	8.5	8.5	11.0	10.5	10.5	13.0	12.5	13.0	14.5	14.5	14.5
15	8.5	8.5	8.5	11.0	11.0	11.0	13.0	12.5	13.0	14.5	14.5	14.5
16	8.5	8.5	8.5	11.5	11.0	11.0	13.0	13.0	13.0	14.5	14.5	14.5
17	8.5	8.5	8.5	11.5	11.0	11.0	13.0	13.0	13.0	14.5	14.5	14.5
18	9.0	8.5	8.5	11.5	11.0	11.0	13.0	13.0	13.0	14.5	14.5	14.5
19	8.5	8.5	8.5	11.5	11.0	11.0	13.0	13.0	13.0	14.5	14.5	14.5
20	9.0	8.5	9.0	11.5	11.0	11.5	13.0	13.0	13.0	14.5	14.5	14.5
21	9.0	9.0	9.0	11.5	11.0	11.5	13.0	13.0	13.0	14.5	14.5	14.5
22	9.0	9.0	9.0	11.5	11.0	11.5	13.0	13.0	13.0	14.5	14.5	14.5
23	9.5	9.0	9.0	11.5	11.0	11.5	13.0	13.0	13.0	15.0	14.5	14.5
24	9.5	9.0	9.0	11.5	11.5	11.5	13.5	13.0	13.5	15.0	15.0	15.0
25	9.5	9.0	9.5	11.5	11.5	11.5	13.5	13.5	13.5	15.0	15.0	15.0
26	9.5	9.5	9.5	11.5	11.5	11.5	13.5	13.5	13.5	15.0	15.0	15.0
27	9.5	9.0	9.5	12.0	11.5	11.5	13.5	13.5	13.5	15.0	15.0	15.0
28	9.5	9.5	9.5	12.0	11.5	11.5	13.5	13.5	13.5	15.0	15.0	15.0
29	9.5	9.5	9.5	12.0	11.5	11.5	13.5	13.5	13.5	15.0	15.0	15.0
30	9.5	9.5	9.5	12.0	12.0	12.0	13.5	13.5	13.5	15.0	15.0	15.0
31	---	---	---	12.0	12.0	12.0	14.0	13.5	13.5	---	---	---
MONTH	9.5	7.5	8.5	12.0	9.5	11.0	14.0	12.0	13.0	15.0	13.5	14.5
YEAR	15.0	2.5	8.5									

12088400 NISQUALLY RIVER ABOVE POWELL CREEK, NEAR MCKENNA, WA

LOCATION.--Lat 46°51'03", long 122°26'06", in SE¼SW¼ sec.21, T.16 N., R.3 E., Thurston County, Hydrologic Unit 17110015, on left bank 400 ft (122 m) downstream from logging bridge, 1.8 mi (2.9 km) upstream from Tanwax Creek, 10 mi (16 km) southeast of Yelm, and at mile 32.6 (52.5 km).

DRAINAGE AREA.--431 mi^2 (1,116 km^2). Area at site used 1941-63, 445 mi^2 (1,153 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1941 to July 1963 (published as Nisqually River near McKenna), March 1969 to September 1979 (discontinued).

REVISED RECORDS.--WSP 1286: 1947.

GAGE.--Water-stage recorder. Datum of gage is 388.94 ft (118.549 m) National Geodetic Vertical Datum of 1929. Prior to July 3, 1963, at site 1 mi (1.6 km) downstream at different datum.

REMARKS.--Water-discharge records excellent. No diversion above station. Major portion of flow is regulated by city of Tacoma powerplant at La Grande since December 1943, by Alder Reservoir (see sta 12085000) since November 1944, and by La Grande Reservoir (see sta 12085500) since February 1945.

AVERAGE DISCHARGE.--31 years (water years 1942-62, 1970-79), 1,825 ft^3/s (51.68 m^3/s), 1,322,000 acre-ft/yr (1,630 hm^3/yr) unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,700 ft^3/s (869 m^3/s) Dec. 4, 1975, gage height, 11.97 ft (3.648 m) from rating curve extended above 20,000 ft^3/s (566 m^3/s); minimum, 85 ft^3/s (2.41 m^3/s) Oct. 19, 1945, gage height, 2.57 ft (0.783 m), site and datum then in use; minimum daily, 176 ft^3/s (4.98 m^3/s) Jan. 30, 1945.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,130 ft^3/s (117 m^3/s) Feb. 7, gage height, 5.86 ft (1.786 m); minimum, 731 ft^3/s (20.7 m^3/s) Sept.12, gage height, 3.67 ft (1.119 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1000	976	2480	2190	1020	1800	1310	1420	1400	1060	952	850
2	988	1020	1950	2240	1060	1710	1410	1410	1310	1170	952	890
3	976	1180	1700	2110	1010	1690	1340	1400	1310	1070	952	1000
4	964	1400	1940	1980	1050	1740	1180	1490	1300	1040	952	988
5	964	1260	1710	1950	1220	2280	1160	1670	1290	1020	952	940
6	960	1180	1530	1850	1710	2480	1200	2000	1290	1010	952	976
7	960	1160	1570	820	2800	2890	1170	2240	1240	1010	964	952
8	960	1360	1640	976	1690	2690	1120	2300	1170	1000	988	964
9	960	1280	1640	880	1530	2530	1160	2280	1170	1000	976	1080
10	960	1200	1640	1070	1520	2350	1170	2000	1160	1000	920	1070
11	960	1280	1900	1140	1450	2300	1310	1630	1160	1010	880	890
12	964	1260	1840	1100	1700	2190	1430	1460	1120	1010	880	770
13	952	1340	1730	1080	1940	1940	1770	1430	1070	1000	870	820
14	940	1400	1710	1060	1570	1920	1910	1420	1070	988	870	810
15	940	1400	1900	1050	1520	1950	1770	1410	1070	976	870	800
16	940	1420	2010	1040	1690	2090	1700	1460	1070	976	910	800
17	940	1560	1980	1020	1710	2090	1760	1590	1040	976	940	800
18	930	1420	1950	1000	1780	2040	1830	1640	976	976	952	800
19	930	1500	2080	1020	1630	2000	1830	1640	964	964	952	790
20	930	1770	2250	1110	1840	1950	1730	1630	920	964	964	790
21	930	1880	2250	1500	2060	1740	1660	1630	920	964	1010	840
22	930	1870	2270	1450	2000	1460	1620	1630	920	964	1010	930
23	930	1850	2320	1280	1920	1310	1590	1630	910	976	988	920
24	930	1840	2660	1220	1950	1310	1560	1630	910	964	964	920
25	940	1840	2570	1170	2060	1300	1550	1600	910	964	952	920
26	940	1840	2410	1120	2280	1290	1520	1600	940	964	952	920
27	940	1500	2360	1100	2380	1310	1480	1620	976	964	952	920
28	940	2040	2280	1070	2170	1340	1480	1640	976	964	930	920
29	952	1710	2220	1050	---	1310	1460	1620	976	952	870	920
30	988	2170	2220	1010	---	1310	1450	1600	988	952	830	920
31	976	---	2190	1000	---	1310	---	1530	---	952	830	---
TOTAL	29514	44906	62900	39656	48260	57620	44630	51250	32526	30800	28936	26910
MEAN	952	1497	2029	1279	1724	1859	1488	1653	1084	994	933	897
MAX	1000	2170	2660	2240	2800	2890	1910	2300	1400	1170	1010	1080
MIN	930	976	1530	820	1010	1290	1120	1400	910	952	830	770
AC-FT	58540	89070	124800	78660	95720	114300	88520	101700	64520	61090	57390	53380

CAL YR 1978 TOTAL 464786 MEAN 1273 MAX 2820 MIN 686 AC-FT 921900
WTR YR 1979 TOTAL 497908 MEAN 1364 MAX 2890 MIN 770 AC-FT 987600

12088400 NISQUALLY RIVER ABOVE POWELL CREEK NEAR MCKENNA, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--At logging road bridge, 400 ft upstream from gage.

PERIOD OF RECORD.--Water years 1973, 1977 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978 11...	0930	976	58	6.9	12.6	35	21	10.4	.05
NOV 15...	1210	1410	62	7.6	8.3	20	20	11.8	.02
DEC 06...	1020	1530	56	7.2	4.0	60	18	12.7	.28
JAN , 1979 31...	1100	1110	69	7.0	--	35	11	13.7	.19
FEB 22...	1000	2010	59	7.3	3.3	65	10	12.8	.34
MAR 14...	1010	1940	63	7.2	4.6	25	7.0	12.9	.27
APR 18...	1020	1030	51	7.6	6.0	60	7.0	13.3	.28
MAY 23...	1010	1640	56	7.6	8.5	20	2.0	12.1	.13
JUN 20...	1025	930	53	7.7	9.0	20	3.0	11.9	.10
JUL 11...	0950	1010	52	7.6	11.2	25	2.0	11.4	.05
AUG 08...	1015	988	52	7.5	12.8	20	5.0	10.8	.01
SEP 06...	1015	976	65	7.2	14.0	20	31	9.9	.05

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978 11...	.01	--	--	--	--	.030	.00	.00
NOV 15...	.01	.21	.22	.24	1.1	.020	.00	.00
DEC 06...	.02	--	--	--	--	.020	.04	.12
JAN , 1979 31...	.05	.10	.15	.34	1.5	.020	.00	.00
FEB 22...	.03	--	--	--	--	.020	.07	.21
MAR 14...	.01	.09	.10	.37	1.6	.010	.00	.00
APR 18...	.01	.10	.11	.38	1.7	.020	.01	.03
MAY 23...	.01	.05	.06	.19	.84	.010	.00	.00
JUN 20...	.03	.00	.01	.11	.49	.010	.01	.03
JUL 11...	.00	.00	.00	.05	.22	.010	.03	.09
AUG 08...	.00	.00	.00	.01	.04	.030	.00	.00
SEP 06...	.01	.65	.66	.71	3.1	.030	.04	.12

12089208 CENTRALIA POWER CANAL NEAR MCKENNA, WA

LOCATION.--Lat 46°54'01", long 122°29'50", in NE¼SW¼ sec.1, T.16 N., R.2 E., Thurston County, Hydrologic Unit 17110015, on right bank 500 ft (150 m) downstream from headworks at dam and 3.7 mi (6.0 km) southeast of McKenna.

PERIOD OF RECORD.--March to September 1979.

GAGE.--Water-stage recorder. Altitude of gage is 350 ft (101 m) from topographic map.

REMARKS.--Records excellent. Flow regulated by headworks 500 ft (150 m) upstream from station. Tacoma City Light radio telemeter at station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period March to September, 814 ft³/s (23.1 m³/s) May 6, gage height, 6.93 ft (2.112 m); minimum, 162 ft³/s (4.59 m³/s) May 14, gage height, 1.25 ft (0.381 m); minimum daily, 369 ft³/s (10.5 m³/s) Sept. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, MARCH TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	763	763	766	573	575	456
2					*527	---	769	762	739	669	574	483
3						---	751	758	734	624	574	591
4				*790		---	617	769	740	601	575	599
5						---	597	785	745	582	576	550
6						---	659	795	748	567	515	582
7						---	665	782	742	536	500	571
8						---	646	787	732	534	598	572
9						---	655	788	733	537	597	647
10				*427		---	684	779	719	539	541	703
11						---	706	765	715	547	501	629
12						---	740	767	691	554	500	369
13					*784	*61	771	767	628	547	490	392
14						---	755	654	626	530	486	413
15						---	767	767	629	524	487	410
16						---	763	771	625	531	530	409
17				*619		---	768	781	606	554	565	395
18						---	773	779	540	571	578	402
19						---	772	778	526	580	576	413
20			*799			---	763	776	489	569	592	414
21						745	756	777	471	570	616	441
22						718	759	781	482	581	630	544
23						689	760	780	476	582	572	553
24						715	762	781	470	576	564	567
25				*719		707	760	780	471	574	562	551
26						710	763	780	496	578	560	544
27						723	763	780	540	578	560	545
28						737	760	784	540	576	545	543
29						742	759	782	540	575	462	543
30						765	757	780	533	574	374	540
31						764	---	775	---	570	410	---
TOTAL						---	21983	23953	18492	17620	16881	15351
MEAN						---	733	773	616	568	545	512
MAX						---	773	795	766	669	630	703
MIN						---	597	654	470	524	374	369
AC-FT						---	43600	47510	36680	34950	33480	30450

*Result of discharge measurement.

12089500 NISQUALLY RIVER AT MCKENNA, WA

LOCATION.--Lat 46°56'01", long 122°33'35", in SE¼NW¼ sec.28, T.17 N., R.2 E., Thurston County, Hydrologic Unit 17110015, on left bank at downstream side of State Highway 507 bridge at McKenna, and at mile 21.8 (35.1 km).

DRAINAGE AREA.--517 mi² (1,339 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1947 to September 1968, May 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 285.47 ft (87.011 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1968, water-stage recorder at site 100 ft (30.5 m) downstream at present datum.

REMARKS.--Water-discharge records excellent. Flow regulated by Alder Reservoir (see sta 12085000) at mile 44.2 (71.1 km) and La Grande Reservoir (see sta 12085500) at mile 42.5 (68.4 km). Centralia power canal (see station 12089208) diverts water 4.4 mi (7.1 km) upstream from station, which is returned to river at power-plant 9.2 mi (14.8 km) downstream from station. Minor diversions for irrigation upstream from station. Tacoma City Light radio telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,700 ft³/s (728 m³/s) Jan. 29, 1965, gage height, 13.00 ft (3.962 km) at site then in use; minimum, 20 ft³/s (0.57 m³/s) Sept. 10, 11, 1965, Aug. 31, 1966; minimum gage height, 0.75 ft (0.229 m) Aug. 13, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,530 ft³/s (100 m³/s) Feb. 7, gage height, 5.12 ft (1.561 m); minimum, 220 ft³/s (6.23 m³/s) Sept. 11, gage height, 1.45 ft (0.442 m); minimum daily, 279 ft³/s (7.90 m³/s) Sept. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	593	570	2010	1470	547	1250	816	700	676	474	392	401
2	577	597	1450	1500	568	1100	713	676	598	521	386	422
3	572	744	1100	1420	542	1060	682	670	598	453	389	434
4	562	911	1300	1290	592	1110	684	719	586	448	390	410
5	557	574	1100	1260	650	1690	592	949	576	442	397	401
6	554	537	900	1230	939	1960	580	1280	550	449	456	415
7	552	537	872	579	2430	2370	530	1610	530	478	397	407
8	545	634	949	542	1220	2210	503	1680	650	464	395	408
9	563	561	920	498	949	2030	514	1650	650	459	388	444
10	574	577	962	633	956	1850	569	1410	446	461	383	422
11	567	640	1140	552	865	1730	580	970	449	460	382	279
12	560	625	1150	492	1080	1710	720	719	447	452	386	404
13	565	631	1010	486	1420	1860	1100	700	446	451	376	443
14	562	667	977	492	1050	1490	1300	791	446	456	389	407
15	563	672	1150	492	900	1420	1120	676	447	457	385	403
16	561	683	1330	476	1040	1520	1040	700	457	450	390	403
17	562	823	1300	455	1100	1550	1090	851	444	427	385	412
18	562	719	1260	460	1220	1490	1180	921	444	408	384	405
19	562	810	1340	465	1100	1430	1170	921	442	390	388	384
20	562	900	1520	530	1240	1390	1090	914	437	397	380	385
21	562	1180	1520	836	1500	1180	970	907	452	391	398	391
22	561	1150	1550	893	1440	893	921	893	438	389	386	390
23	559	1140	1610	688	1370	800	886	893	439	393	419	386
24	559	1130	1880	616	1300	852	865	893	440	393	410	391
25	565	1120	1800	569	1520	852	851	879	439	390	398	389
26	563	1110	1720	514	1690	840	823	872	443	388	397	393
27	563	935	1660	481	1850	852	784	879	438	392	402	390
28	563	1230	1560	460	1670	876	770	908	437	393	395	397
29	566	1040	1500	460	---	852	765	886	435	393	405	396
30	579	1430	1400	490	---	822	719	872	451	392	467	399
31	573	---	1470	520	---	822	---	817	---	390	414	---
TOTAL	17496	24975	41550	21857	32836	40549	24673	29190	14365	13294	12309	12019
MEAN	564	833	1341	705	1173	1308	822	942	478	429	397	401
MAX	593	1430	2010	1500	2430	2370	1300	1680	676	521	467	444
MIN	545	537	872	455	542	822	503	670	435	388	376	279
AC-FT	34700	49540	82430	43350	65130	80430	48940	57910	28450	26370	24410	23840

CAL YR 1978 TOTAL 289541 MEAN 793 MAX 2120 MIN 383 AC-FT 574430
WTR YR 1979 TOTAL 285109 MEAN 781 MAX 2430 MIN 279 AC-FT 565500

12089500 NISQUALLY RIVER AT MCKENNA, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-70, 1974 to current year.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978								
10...	1235	564	58	7.4	12.3	10	10.5	K15
NOV								
08...	1130	713	57	7.2	10.4	20	9.9	K60
DEC								
06...	1150	907	58	7.1	4.5	8.0	12.3	100
JAN , 1979								
12...	1300	486	50	7.6	3.7	9.0	12.9	350
FEB								
07...	1215	2240	46	7.0	2.6	35	13.1	220
MAR								
07...	1145	2430	48	7.3	6.2	20	12.6	27
APR								
12...	1240	713	53	7.0	6.6	4.0	13.0	310
MAY								
09...	1120	1700	54	7.3	7.8	3.0	12.1	18
JUN								
06...	1200	558	51	7.4	10.4	1.0	11.4	5
JUL								
11...	1130	455	52	7.0	12.2	7.0	11.1	40
AUG								
08...	1120	405	53	7.2	13.4	4.0	10.5	3
SEP								
12...	1135	395	57	7.6	14.4	15	10.1	150

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT , 1978								
10...	.06	.11	.15	.26	.32	1.4	.060	.01
NOV								
08...	.09	.08	.15	.23	.32	1.4	.050	.00
DEC								
06...	.29	.09	.18	.27	.56	2.5	.040	.04
JAN , 1979								
12...	.19	.04	.25	.29	.48	2.1	.070	.00
FEB								
07...	.81	.12	.78	.90	1.7	7.6	.210	.06
MAR								
07...	.31	.02	.25	.27	.58	2.6	.050	.01
APR								
12...	.25	.06	.23	.29	.54	2.4	.020	.02
MAY								
09...	.14	.02	.12	.14	.28	1.2	.010	.00
JUN								
06...	.13	.02	.08	.10	.23	1.0	.010	.00
JUL								
11...	.05	.01	.01	.02	.07	.31	.080	.04
AUG								
08...	.02	.00	.06	.06	.08	.35	.010	.00
SEP								
12...	.12	.09	.49	.58	.70	3.1	.050	.03

K.--Results based upon colony counts outside the ideal range.

12090240 NISQUALLY RIVER AT NISQUALLY, WA

LOCATION.--Lat 47°03'43", long 122°41'42", in SW¼NW¼ sec.9, T.18 N., R.1 E., Pierce County, Hydrologic Unit 17110015, at old Pacific Highway bridge, 0.3 mi (0.5 km) northeast of Nisqually and at mile 3.4 (5.5 km).

DRAINAGE AREA.--712 mi² (1,844 km²).

PERIOD OF RECORD.--Water years 1968 (partial-record station), 1973, 1976 to current year.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
OCT , 1978 25...	1305	1070	69	7.5	11.0	45	20	12.6	23	0	6.1
NOV 08...	0900	1300	65	7.2	10.4	25	16	10.5	25	1	6.7
DEC 06...	0910	2080	64	7.2	3.9	65	10	12.5	24	0	6.2
JAN , 1979 31...	0935	1260	77	7.0	--	35	11	12.7	26	0	6.8
FEB 22...	0915	3070	68	7.3	4.0	65	10	12.6	27	5	7.7
MAR 14...	0855	2960	64	6.9	5.0	25	5.0	12.3	20	1	6.0
APR 18...	0850	2690	61	7.3	6.5	55	6.0	12.1	22	3	5.7
MAY 23...	0910	2130	65	7.2	10.2	20	4.0	11.0	26	6	6.8
JUN 20...	0850	1130	64	7.4	11.1	15	2.0	10.5	23	5	6.2
JUL 11...	0840	1200	63	7.5	12.6	20	3.0	10.3	28	10	8.1
AUG 08...	0910	1160	64	7.5	14.3	20	4.0	9.6	23	4	6.2
SEP 06...	0850	1160	67	7.1	13.0	30	11	9.6	23	0	6.0

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978 25...	2.0	3.6	24	.3	.9	29	0	24	1.5	3.7
NOV 08...	2.0	3.6	23	.3	.8	29	0	24	2.9	10
DEC 06...	2.1	4.8	29	.4	1.0	31	0	25	3.1	6.9
JAN , 1979 31...	2.3	3.7	23	.3	.7	36	0	30	5.8	1.9
FEB 22...	1.9	3.6	22	.3	.6	27	0	22	2.2	4.2
MAR 14...	1.3	3.8	28	.4	.5	24	0	20	4.8	3.9
APR 18...	1.8	3.6	26	.3	.7	23	0	19	1.8	4.5
MAY 23...	2.1	3.2	21	.3	.9	24	0	20	2.4	9.3
JUN 20...	1.9	3.5	24	.3	.8	22	0	18	1.4	7.0
JUL 11...	1.9	3.7	22	.3	.6	22	0	18	1.1	10
AUG 08...	1.9	3.4	31	.3	.8	24	0	20	1.2	4.0
SEP 06...	1.9	3.9	35	.4	.8	30	0	25	3.8	5.5

12090240 NISQUALLY RIVER AT NISQUALLY, WA--Continued

WATER QUALITY DATA

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978 25...	2.4	.10	.01	--	--	--	--	.030	.01	.03
NOV 08...	2.3	.15	.01	--	--	--	--	.030	.00	.00
DEC 06...	2.7	.38	.04	--	--	--	--	.030	.02	.06
JAN , 1979 31...	3.0	.33	.03	--	--	--	--	.040	.01	.03
FEB 22...	2.5	.44	.03	.15	.18	.62	2.7	.030	.07	.21
MAR 14...	2.3	.33	.01	.13	.14	.47	2.1	.010	.01	.03
APR 18...	2.0	.34	.01	.16	.17	.51	2.3	.020	.00	.00
MAY 23...	2.2	.18	.03	.05	.08	.26	1.2	.010	.00	.00
JUN 20...	2.4	.15	.02	.30	.32	.47	2.1	.020	.00	.00
JUL 11...	1.7	.08	.01	.00	.00	.08	.35	.020	.03	.09
AUG 08...	2.0	.05	.01	.12	.13	.18	.80	.020	.00	.00
SEP 06...	2.3	.10	.02	.64	.66	.76	3.4	.030	.01	.03

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT , 1978 25...	0	0	0	0	3	1	.0	0	0	0
NOV 08...	0	0	0	0	0	0	.0	0	0	10
DEC 06...	0	10	--	0	35	--	.0	0	0	90
JAN , 1979 31...	1	0	<1	10	4	0	.0	0	0	<3
FEB 22...	0	0	1	10	1	0	.0	0	0	10
MAR 14...	1	0	0	0	0	0	.1	0	0	0
APR 18...	0	7	<1	0	0	0	.0	0	0	<3
MAY 23...	1	0	0	10	1	0	.0	0	0	10
JUN 20...	2	0	0	0	0	2	.1	0	0	10
JUL 11...	1	0	0	20	0	0	.4	0	0	0
AUG 08...	1	0	0	10	1	0	.7	0	0	0
SEP 06...	2	20	0	10	1	0	.0	0	0	0

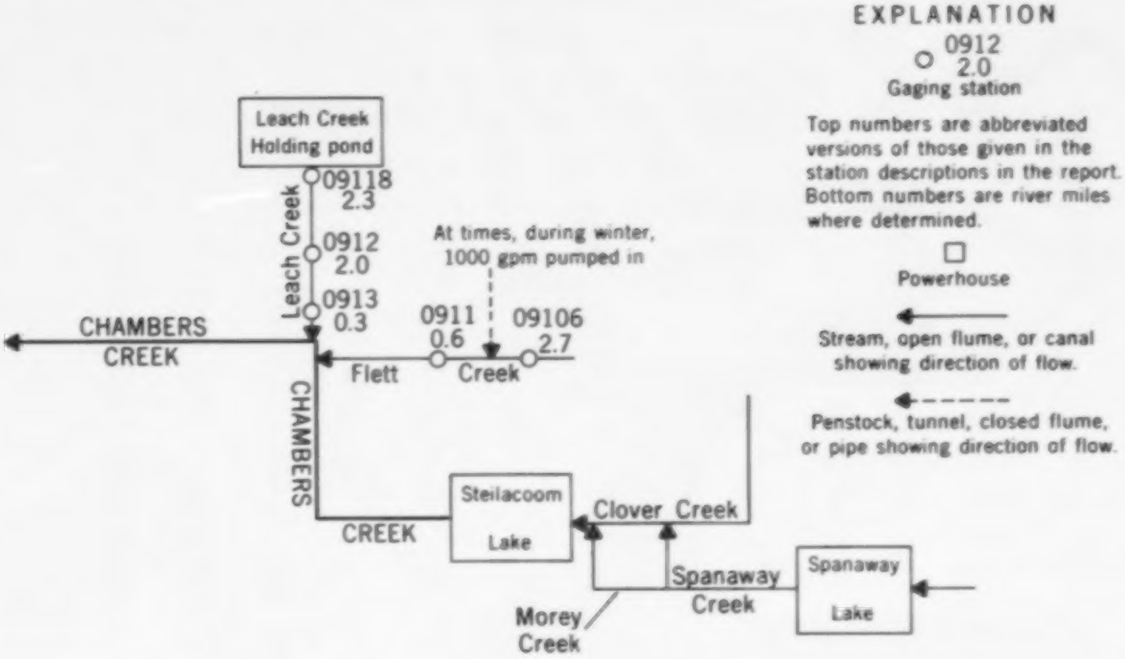
EXPLANATION
0912
2.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Leach Creek Holding pond
09118 2.3
Leach Creek
0912 2.0
0913 0.3
At times, during winter, 1000 gpm pumped in
0911 0.6
09106 2.7
CHAMBERS CREEK
Flett Creek
CHAMBERS
CREEK
Steilacoom Lake
Clover Creek
Spanaway Creek
Spanaway Lake
Morey Creek

Figure 10. Gaging stations in Chambers Creek basin.

12091060 FLETT CREEK AT MOUNTAIN VIEW MEMORIAL PARK, AT TACOMA, WA

LOCATION.--Lat 47°11'06", long 122°29'17", in NW¼NE¼ sec.36, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank 0.4 mi (0.6 km) downstream from 74th Street crossing in Tacoma and 2.7 mi (4.3 km) upstream from mouth.

DRAINAGE AREA.--5.91 mi² (15.31 km²), excludes 0.68 mi² (1.76 km²) storm drainage diverted to Leach Creek basin but does not include some urban storm drainage diverted into the basin.

PERIOD OF RECORD.--July 1967 to current year.

GAGE.--Water-stage recorder and metal V-notch control. Altitude of gage is 235 ft (71.6 m), from topographic map.

REMARKS.--Records good. No regulation. Storm sewer drainage above station. Several diversions for irrigation and industrial use above station.

AVERAGE DISCHARGE.--12 years, 4.11 ft³/s (0.116 m³/s), 2,980 acre-ft/yr (3.67 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 103 ft³/s (2.92 m³/s) Mar. 5, 1972, gage height, 3.53 ft (1.076 m); maximum gage height, 3.73 ft (1.137 m) Jan. 18, 1972, backwater from road construction; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 39 ft³/s (110 m³/s) Feb. 6; gage height, 2.71 ft (0.826 m); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.20	.00	19	.48	.79	11	.15	.00	.00	1.9	.00	.00
2	.10	.26	19	.40	.55	7.8	.23	.00	.00	.00	.00	.00
3	.04	4.0	14	.35	1.2	7.8	.10	.00	.00	.00	.00	.00
4	.02	10	13	.31	1.2	11	.06	.00	.00	.00	.00	.00
5	.00	9.4	13	.28	3.3	17	.04	1.1	.00	.00	.00	.00
6	.00	5.4	10	.25	18	21	.04	.71	.00	.00	.00	.00
7	.00	2.8	7.0	.23	23	19	.03	.62	.00	.00	.00	.00
8	.00	1.3	5.1	.22	25	15	.39	.35	.00	.00	.00	.09
9	.00	.44	5.4	.30	24	11	.88	.19	.00	.00	.00	.00
10	.00	.14	6.0	4.0	25	7.8	.88	.09	.00	.00	.00	.00
11	.00	.03	7.4	3.5	23	6.4	1.1	.03	.00	.00	.00	.00
12	.00	.00	6.7	3.3	34	4.8	2.2	.00	.00	.00	.00	.00
13	.00	.00	5.4	2.4	29	4.2	3.5	.00	.00	.00	.00	.00
14	.00	.00	4.2	2.1	27	3.5	3.5	.00	.00	.00	.00	.00
15	.00	.02	3.3	1.5	25	4.5	4.2	.00	.00	.00	.00	.00
16	.00	.62	2.6	.88	24	4.0	3.5	.00	.00	.00	.00	.00
17	.00	.70	2.4	.62	19	4.0	3.3	.00	.00	.00	.00	.00
18	.00	3.5	2.1	.44	16	3.0	2.6	.00	.00	.00	.00	.00
19	.00	7.8	1.5	.79	15	2.6	1.9	.00	.00	.00	.00	.00
20	.00	8.1	1.1	2.8	12	2.2	1.5	.00	.00	.00	.00	.00
21	.00	6.7	.88	12	12	1.7	1.1	.00	.00	.00	.00	.00
22	.00	4.5	3.0	15	10	1.1	.70	.00	.00	.00	.00	.00
23	.00	3.0	3.0	12	14	.62	.52	.00	.00	.00	.00	.00
24	.00	2.2	4.0	8.5	16	.44	.36	.00	.00	.00	.00	.00
25	.00	1.9	3.3	6.0	17	.30	.24	.00	.00	.00	.00	.00
26	.00	1.9	2.6	4.5	18	.26	.13	.00	.00	.00	.00	.00
27	.00	2.4	2.1	3.3	17	.23	.06	.00	.00	.00	.00	.00
28	.00	4.2	1.3	2.4	14	.20	.03	.00	.00	.00	.00	.00
29	.00	7.0	.98	1.9	---	.14	.01	.00	.00	.00	.00	.00
30	.00	14	.70	1.5	---	.10	.01	.00	.00	.00	.00	.00
31	.00	---	.56	1.1	---	.07	---	.00	---	.00	.00	---
TOTAL	.36	102.31	170.62	93.35	464.04	172.76	33.26	3.09	.00	1.90	.00	.09
MEAN	.012	3.41	5.50	3.01	16.6	5.57	1.11	.10	.000	.061	.000	.003
MAX	.20	14	19	15	34	21	4.2	1.1	.00	1.9	.00	.09
MIN	.00	.00	.56	.22	.55	.07	.01	.00	.00	.00	.00	.00
CFSM	.002	.58	.93	.51	2.81	.94	.19	.02	.000	.01	.000	.001
IN.	.00	.64	1.07	.59	2.92	1.09	.21	.02	.00	.01	.00	.00
AC-FT	.7	203	338	185	920	343	66	6.1	.00	3.8	.00	.2

CAL YR 1978 TOTAL 1124.35 MEAN 3.08 MAX 20 MIN .00 CFSM .52 IN 7.08 AC-FT 2230
WTR YR 1979 TOTAL 1041.78 MEAN 2.85 MAX 34 MIN .00 CFSM .48 IN 6.56 AC-FT 2070

12091100 FLETT CREEK AT TACOMA, WA

LOCATION.--Lat 47°11'23", long 122°31'08", in NE¼SW¼ sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank at 75th Street, 0.6 mi (1.0 km) upstream from mouth and 0.7 mi (1.1 km) west of city limits of Tacoma.

DRAINAGE AREA.--7.33 mi² (18.98 km²) excludes 0.68 mi² (1.76 km²) storm drainage diverted to Leach Creek basin but does not include some urban storm drainage diverted into the basin.

PERIOD OF RECORD.--June 1959 to current year. Chemical analyses October 1964 to September 1965.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 200 ft (61 m), from topographic map.

REMARKS.--Records fair. Storm sewer drainage above station. Several diversions for irrigation and industrial use. At times, during winter months, 1,000 gpm (0.063 m³/s) is pumped into creek for short intervals from Mountain View Memorial Park.

AVERAGE DISCHARGE.--20 years, 8.58 ft³/s (0.243 m³/s), 6,220 acre-ft/yr (7.67 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 132 ft³/s (3.74 m³/s) Mar. 5, 1972, gage height, 2.97 ft (0.905 m), from rating curve extended above 45 ft³/s (1.27 m³/s) on basis of computation of peak flow over weir at gage height 2.82 ft (0.860 m); minimum, 0.29 ft³/s (0.008 m³/s) Aug. 27, 1967; minimum gage height, 1.30 ft (0.396 m) Aug. 18, 19, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 45 ft³/s (1.27 m³/s) Feb. 12, gage height, from peak stage indicator; 2.68 ft (0.817 m); minimum daily discharge, 0.64 ft³/s (0.018 m³/s) Aug. 11, 12, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	2.7	23	5.0	5.6	23	7.4	4.7	2.7	3.9	.76	.83
2	4.1	3.4	26	4.7	5.3	20	7.6	4.7	2.5	3.1	.70	2.1
3	3.7	6.1	25	4.5	7.0	18	7.4	4.5	2.3	2.3	.70	2.2
4	3.5	8.3	22	4.3	8.0	20	6.9	4.9	2.2	1.8	.70	1.3
5	3.4	11	20	4.2	12	26	6.9	5.4	2.2	1.7	.76	1.2
6	3.3	12	18	4.1	20	34	6.7	5.4	2.0	1.5	.70	1.1
7	3.3	9.3	15	3.9	29	34	6.5	4.7	2.0	1.4	.70	1.4
8	3.1	7.2	12	3.7	34	29	6.9	4.3	2.0	1.3	.70	2.0
9	3.1	5.8	13	5.0	33	24	7.4	4.0	2.0	1.2	.70	1.7
10	3.1	4.9	16	8.0	35	20	7.4	3.8	2.0	1.3	.70	1.4
11	3.0	4.3	17	7.5	30	18	7.6	3.5	2.0	1.3	.64	1.3
12	3.0	4.1	12	7.4	43	16	8.1	3.3	1.9	1.1	.64	1.2
13	3.0	4.0	11	7.0	39	15	10	3.3	1.8	.98	.64	1.2
14	2.9	3.8	9.9	6.6	37	14	9.4	3.1	1.7	.90	.70	1.2
15	2.9	4.0	9.6	6.4	34	15	10	4.2	1.7	.90	.70	1.2
16	2.9	4.7	8.8	5.9	32	15	10	4.2	1.7	.90	.70	1.1
17	2.9	4.7	8.1	5.5	29	14	9.4	4.0	1.6	.83	.70	1.1
18	2.9	5.4	7.7	5.2	26	13	8.9	4.0	1.6	.83	.76	1.1
19	2.8	8.6	7.2	5.4	24	12	8.1	3.5	1.5	.83	.76	1.1
20	2.8	11	6.8	6.4	23	11	7.1	3.5	1.5	.83	.83	1.1
21	2.8	12	6.4	13	22	11	6.7	3.4	1.4	.76	.83	1.1
22	2.7	9.9	7.0	18	20	10	6.3	3.3	1.4	.76	.83	1.1
23	2.7	8.1	7.5	19	23	9.2	6.0	3.3	1.3	.90	.76	1.1
24	2.8	7.0	7.9	16	25	8.6	5.6	3.4	1.3	.90	.70	1.1
25	2.7	6.5	7.7	12	26	8.3	5.4	3.1	1.2	.83	.70	1.0
26	2.7	6.2	7.4	9.7	30	8.1	5.1	3.1	1.2	.83	.70	1.0
27	2.7	6.1	7.0	8.4	30	8.1	4.9	3.5	1.1	.83	.70	1.0
28	2.8	7.0	6.4	7.5	26	7.8	4.7	3.7	1.1	.76	.70	1.0
29	2.9	8.3	6.0	6.8	---	7.8	4.7	3.1	1.1	.76	.70	1.0
30	2.8	15	5.6	6.4	---	7.6	4.7	2.9	1.4	.76	.70	1.0
31	2.8	---	5.3	6.0	---	7.1	---	2.8	---	.76	.70	---
TOTAL	94.6	211.4	362.3	233.5	707.9	484.6	213.8	118.6	51.4	37.75	22.21	37.23
MEAN	3.05	7.05	11.7	7.53	25.3	15.6	7.13	3.83	1.71	1.22	.72	1.24
MAX	4.5	15	26	19	43	34	10	5.4	2.7	3.9	.83	2.2
MIN	2.7	2.7	5.3	3.7	5.3	7.1	4.7	2.8	1.1	.76	.64	.83
AC-FT	188	419	719	463	1400	961	424	235	102	75	44	74

CAL YR 1978 TOTAL 3547.10 MEAN 9.72 MAX 39 MIN 2.0 AC-FT 7040
WTR YR 1979 TOTAL 2575.29 MEAN 7.06 MAX 43 MIN .64 AC-FT 5110

Note.--No gage height record Feb. 2-23.

12091180 LEACH CREEK AT HOLDING POND, AT FIRCREST, WA

LOCATION.--Lat 47°13'29", long 122°30'32", in NE¼NE¼ sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank at holding pond dam, 0.8 mi (1.3 km) south of Fircrest, and 2.3 mi (3.7 km) upstream from mouth.

DRAINAGE AREA.--4.59 mi² (11.89 km²), includes 0.68 mi² (1.76 km²) storm drainage from Flett Creek basin.

PERIOD OF RECORD.--July 1967 to current year.

REVISED RECORDS.--WDR WA-77-1: 1975(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 200 ft (61 m) National Geodetic Vertical Datum of 1929 (levels by city of Tacoma).

REMARKS.--Records good. Drainage into upper end of basin influenced by urbanization of area. Flow can be regulated by manually operated gate in flood control dam. Storage is not retained and observed annual runoff closely represents natural runoff of basin. No known diversion above station.

AVERAGE DISCHARGE.--12 years, 3.83 ft³/s (0.108 m³/s), 2,770 acre-ft/yr (3.42 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 114 ft³/s (3.23 m³/s) Mar. 5, 1972, gage height, 11.95 ft (3.642 m), from rating curve extended above 45 ft³/s (1.27 m³/s); minimum, 0.34 ft³/s (0.010 m³/s) Mar. 1, 2, 1969, gage height, 7.63 ft (2.326 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50 ft³/s (1.42 m³/s) Feb. 6, gage height, 10.12 ft (3.085 m), minimum, 1.2 ft³/s (0.034 m³/s) on all or part of many days during August and September; minimum gage height, 7.68 ft (2.341 m) Nov. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	1.7	4.4	1.8	1.7	2.6	2.4	1.7	1.8	28	1.7	3.3
2	1.6	11	2.3	1.7	1.7	2.4	2.6	1.7	1.5	2.3	1.8	20
3	1.7	22	3.7	1.7	3.8	7.0	2.2	1.6	1.5	1.7	1.8	6.4
4	1.7	15	13	1.7	2.2	14	2.0	3.3	1.6	1.5	1.7	1.7
5	1.7	2.1	2.7	1.7	6.7	19	2.0	12	2.2	1.5	1.5	2.8
6	1.7	1.9	2.1	1.6	27	6.1	2.0	6.0	1.8	1.5	1.6	1.5
7	1.5	1.9	1.9	1.6	16	3.7	2.0	2.3	1.5	1.5	1.9	2.1
8	1.5	2.1	2.0	1.6	5.0	2.8	3.2	1.9	1.5	1.4	1.4	15
9	1.6	1.9	5.2	2.3	6.0	2.7	4.3	1.6	1.5	1.9	1.4	3.8
10	1.7	1.9	8.7	16	11	2.3	4.3	1.6	1.5	2.0	1.5	1.3
11	1.7	1.8	5.2	2.9	8.5	2.2	3.6	1.5	1.5	2.1	1.4	1.4
12	1.7	1.9	2.2	3.0	29	2.2	8.5	1.5	1.6	1.6	1.4	1.4
13	1.7	1.9	1.9	2.2	11	2.2	7.4	1.5	2.6	1.5	1.6	1.4
14	1.7	1.7	2.7	3.4	3.8	2.1	2.2	1.6	1.5	1.4	2.2	1.4
15	1.5	5.9	2.1	2.4	3.9	4.6	3.1	1.5	1.5	1.3	1.5	1.3
16	1.7	14	2.2	2.2	4.3	2.3	3.3	1.5	1.6	1.5	2.2	1.2
17	1.8	2.7	3.1	2.1	6.0	2.1	2.7	1.5	1.3	1.5	1.3	1.3
18	1.8	8.9	2.4	2.0	5.6	2.0	2.2	1.5	1.4	1.5	4.7	1.4
19	1.8	9.4	2.2	3.9	5.0	2.0	2.1	1.5	1.5	1.5	4.2	1.4
20	2.4	5.0	2.3	8.5	3.5	2.0	2.2	1.5	1.5	1.6	2.9	1.4
21	1.6	3.2	2.4	21	5.1	2.0	2.0	1.5	1.4	1.5	6.3	1.4
22	1.5	2.2	8.7	2.8	2.6	2.0	2.1	1.5	1.5	1.4	1.7	1.3
23	1.7	1.7	3.5	3.4	10	2.0	2.1	1.5	1.3	1.5	1.4	1.2
24	2.6	2.2	3.2	2.7	5.7	1.9	2.2	1.5	1.3	1.6	1.3	1.4
25	1.7	2.4	2.1	2.2	11	1.9	2.2	1.5	1.4	1.6	1.3	1.5
26	1.7	2.4	2.1	2.1	5.7	2.0	2.3	1.4	1.5	1.6	1.3	1.5
27	1.7	7.2	2.9	1.9	6.7	2.1	2.2	2.8	1.5	1.6	1.2	1.8
28	3.5	4.8	2.1	1.8	2.9	2.2	2.2	1.4	1.5	1.5	1.2	1.4
29	2.1	13	1.9	1.8	---	2.1	2.2	1.4	1.6	1.5	1.2	1.2
30	1.7	21	1.9	1.8	---	2.0	2.1	1.5	3.3	1.5	1.3	1.4
31	1.7	---	1.8	1.7	---	2.1	---	1.5	---	1.6	1.2	---
TOTAL	55.5	174.8	104.9	107.5	211.4	108.6	85.9	66.3	48.7	75.7	59.1	85.6
MEAN	1.79	5.83	3.38	3.47	7.55	3.50	2.86	2.14	1.62	2.44	1.91	2.85
MAX	3.5	22	13	21	29	19	8.5	12	3.3	28	6.3	20
MIN	1.5	1.7	1.8	1.6	1.7	1.9	2.0	1.4	1.3	1.3	1.2	1.2
AC-FT	110	347	208	213	419	215	170	132	97	150	117	170

CAL YR 1978 TOTAL 1387.5 MEAN 3.80 MAX 40 MIN 1.5 AC-FT 2750
WTR YR 1979 TOTAL 1184.0 MEAN 3.24 MAX 29 MIN 1.2 AC-FT 2350

12091200 LEACH CREEK NEAR FIRCREST, WA

LOCATION.--Lat 47°13'18", long 122°30'29", in lot 24, block 14, SE¼NE¼ sec.14, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on right bank 1.0 mi (1.6 km) south of Fircrest and 2 mi (3.2 km) upstream from mouth.

DRAINAGE AREA.--4.73 mi^2 (12.25 km^2) includes 0.68 mi^2 (1.76 km^2) storm drainage from Flett Creek basin.

PERIOD OF RECORD.--March 1957 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and wooden control. Altitude of gage is 190 ft (58 m), from topographic map.

REMARKS.--Records fair except those for period of no gage-height record, Feb. 6 to Mar. 1, Aug. 7 to Sept. 30, which are poor. Since Oct. 1, 1961, flow may be regulated at dam above station for flood control. Storage is not retained and observed annual runoff closely represents natural runoff of basin. Drainage into upper end of basin influenced by urbanizing of area. No known diversion above station.

AVERAGE DISCHARGE.--22 years, 4.07 ft^3/s (0.115 m^3/s), 2,950 acre-ft/yr (3.64 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 198 ft^3/s (5.61 m^3/s) Feb. 28, 1972, gage height, 3.51 ft (1.070 m), from rating curve extended above 60 ft^3/s (1.70 m^3/s); minimum, 0.1 ft^3/s (0.003 m^3/s) Sept. 22, 1965, gage height, 1.02 ft (0.311 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 70 ft^3/s (1.98 m^3/s) Feb. 6, gage height, 2.08 ft (0.634 m); minimum daily, 1.4 ft^3/s (0.040 m^3/s) Aug. 27, 28, 29, Sept. 16, 23, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	2.2	5.8	2.1	2.1	2.9	2.7	2.0	2.2	35	1.8	5.0
2	2.1	11	3.0	2.0	2.1	2.7	3.2	2.0	2.1	2.9	1.8	24
3	2.1	22	4.5	2.0	4.8	8.1	2.5	1.9	2.1	2.2	1.8	7.0
4	2.2	16	17	2.0	2.8	16	2.3	4.9	2.1	2.1	1.8	2.1
5	2.2	2.3	3.5	2.0	8.3	23	2.3	14	2.9	2.0	1.8	3.3
6	2.2	2.2	2.7	1.9	32	7.9	2.3	7.3	2.5	2.0	1.8	1.9
7	2.1	2.2	2.5	1.9	15	4.3	2.3	3.4	2.2	2.0	2.0	2.4
8	2.1	2.7	2.5	1.9	5.8	3.2	3.9	2.7	2.1	1.9	1.6	18
9	2.1	2.5	6.4	2.5	7.4	3.1	5.0	2.3	2.1	2.1	1.6	4.2
10	2.1	2.4	10	17	12	2.7	4.9	2.3	2.1	2.2	1.7	1.5
11	2.1	2.3	7.3	3.2	10	2.5	4.1	2.3	2.1	2.2	1.6	1.7
12	2.1	2.5	2.8	3.6	35	2.5	9.0	2.2	2.2	2.0	1.6	1.7
13	2.1	2.5	2.7	2.6	17	2.5	8.0	2.2	3.4	1.9	1.8	1.7
14	2.1	2.2	3.5	3.9	3.9	2.5	2.5	2.3	2.2	1.8	2.5	1.7
15	2.0	6.4	2.4	3.0	4.1	5.5	3.2	2.3	2.1	1.8	1.8	1.5
16	2.1	15	2.3	2.5	4.6	2.7	3.4	2.3	2.3	1.8	2.5	1.4
17	2.2	3.5	3.3	2.5	6.3	2.5	2.7	2.2	2.1	1.8	1.5	1.6
18	2.2	9.1	2.5	2.3	5.8	2.3	2.5	2.2	2.1	1.9	5.2	1.7
19	2.2	12	2.3	4.6	5.0	2.3	2.3	2.2	2.1	1.9	5.0	1.7
20	2.8	6.0	2.4	10	3.7	2.3	2.3	2.2	2.1	1.9	3.5	1.7
21	2.1	3.9	2.7	27	5.1	2.3	2.2	2.2	2.1	1.8	7.4	1.6
22	2.0	3.0	8.4	3.3	2.4	2.3	2.2	2.2	2.1	1.8	2.1	1.5
23	2.1	2.2	3.5	4.0	12	2.3	2.3	2.2	2.0	1.8	1.6	1.4
24	3.1	2.7	3.7	3.2	6.2	2.2	2.3	2.2	2.0	1.9	1.5	1.6
25	2.1	2.9	2.3	2.6	13	2.2	2.3	2.2	2.0	1.8	1.5	1.8
26	2.1	2.9	2.3	2.4	6.3	2.3	2.3	2.2	2.0	1.8	1.5	1.8
27	2.2	6.9	3.3	2.3	7.4	2.5	2.3	3.9	2.0	1.9	1.4	2.1
28	4.2	6.2	2.6	2.2	3.5	2.6	2.3	2.2	2.0	1.8	1.4	1.7
29	2.4	15	2.3	2.2	---	2.4	2.2	2.2	2.1	1.8	1.4	1.4
30	2.1	27	2.2	2.2	---	2.3	2.1	2.2	4.5	1.8	1.5	1.6
31	2.2	---	2.1	2.1	---	2.3	---	2.2	---	1.8	1.5	---
TOTAL	69.8	199.7	124.8	127.0	243.6	127.2	93.9	91.1	67.9	93.4	67.5	102.3
MEAN	2.25	6.66	4.03	4.10	8.70	4.10	3.13	2.94	2.26	3.01	2.18	3.41
MAX	4.2	27	17	27	35	23	9.0	14	4.5	35	7.4	24
MIN	2.0	2.2	2.1	1.9	2.1	2.2	2.1	1.9	2.0	1.8	1.4	1.4
CFSM	.48	1.41	.85	.87	1.84	.87	.66	.62	.48	.64	.46	.72
IN.	.55	1.57	.98	1.00	1.92	1.00	.74	.72	.53	.73	.53	.80
AC-FT	138	396	248	252	483	252	186	181	135	185	134	203

CAL YR 1978 TOTAL 1587.0 MEAN 4.35 MAX 47 MIN 1.8 CFSM .92 IN 12.48 AC-FT 3150
WTR YR 1979 TOTAL 1408.2 MEAN 3.86 MAX 35 MIN 1.4 CFSM .82 IN 11.07 AC-FT 2790

12091300 LEACH CREEK NEAR STEILACOOM, WA

LOCATION.--Lat 47°11'54", long 122°31'17", in NW¼NW¼ sec.26, T.20 N., R.2 E., Pierce County, Hydrologic Unit 17110019, on left bank 0.3 mi (0.5 km) upstream from mouth and 4.1 mi (6.6 km) northeast of Steilacoom.

DRAINAGE AREA.--6.56 mi² (16.99 km²), includes 0.68 mi² (1.76 km²), storm drainage from Flett Creek basin. Area used prior to July 1967, 5.88 mi² (15.23 km²).

PERIOD OF RECORD.--February 1957 to current year. Chemical analyses water years 1963-65, 1976.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 140 ft (43 m), from topographic map. Prior to June 27, 1973, water-stage recorder at site 150 ft (46 m) upstream at different datum. Supplementary water-stage recorder at site 50 ft (15 m) downstream at different datum used Feb. 4, 1963, to Feb. 27, 1964. June 27, 1973 to Mar. 14, 1975, nonrecording gage at site 350 ft (107 m) upstream at different datum.

REMARKS.--Records fair. Drainage into upper end of basin influenced by urbanizing of area. Some pumping for community use above gage. Flow can be regulated by manually operated gate in flood control dam. Storage is not retained and observed annual runoff closely represents natural runoff of basin.

AVERAGE DISCHARGE.--22 years, 9.76 ft³/s (0.276 m³/s), 7,070 acre-ft/yr (8.72 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 238 ft³/s (6.74 m³/s) Mar. 5, 1972, gage height, 6.88 ft (2.097 m), from high-water mark in well, from rating curve extended above 60 ft³/s (1.70 m³/s), site and datum then in use; maximum gage height, 10.91 ft (3.325 m) Feb. 28, 1972, backwater from partially plugged culvert, site and datum then in use; minimum discharge, 2.0 ft³/s (0.057 m³/s) July 3, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 131 ft³/s (3.71 m³/s) Feb. 6, gage height, 2.07 ft (0.631 m); minimum, 4.6 ft³/s (0.13 m³/s) on all or part of each day Aug. 25-Sept. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	5.9	19	5.2	6.3	8.9	8.5	6.8	5.3	51	6.2	6.5
2	5.9	14	7.8	5.1	6.3	8.4	9.1	6.8	5.3	15	6.2	36
3	5.9	49	9.0	5.1	9.0	13	8.2	6.8	5.3	7.4	6.2	26
4	5.9	42	36	5.1	7.8	21	8.2	8.2	5.3	7.1	6.2	8.6
5	5.9	8.6	9.4	5.1	14	39	8.2	20	6.2	6.8	6.2	9.4
6	5.9	7.8	7.8	4.9	39	21	8.2	12	5.6	6.8	6.2	8.2
7	5.6	7.4	7.4	4.9	38	11	8.0	7.4	5.6	6.8	6.7	9.4
8	5.6	7.4	7.1	4.9	11	9.4	9.7	7.1	5.6	6.2	5.6	29
9	5.6	7.4	12	7.0	12	9.1	11	6.2	5.6	6.8	5.3	11
10	5.9	7.4	13	29	21	8.7	9.4	5.9	5.3	7.4	5.3	6.8
11	5.9	7.1	19	7.8	14	8.4	12	5.9	5.6	7.1	5.6	6.5
12	5.9	7.4	7.1	8.2	65	8.3	15	5.9	5.6	6.8	5.6	6.5
13	5.9	7.4	6.5	7.1	23	8.3	14	5.9	6.5	6.2	5.6	6.2
14	5.9	7.4	7.4	8.2	11	8.2	7.8	5.9	5.6	6.2	6.5	6.2
15	5.9	9.0	6.5	7.8	10	11	8.2	5.9	5.6	6.2	6.2	6.2
16	5.9	39	6.5	7.1	11	8.7	8.2	5.9	5.9	6.2	6.5	5.9
17	5.9	12	7.4	6.8	13	8.3	7.8	5.9	5.6	6.2	5.6	6.2
18	5.9	19	7.1	6.8	13	8.2	7.4	5.6	5.6	6.8	8.2	6.2
19	5.9	36	6.5	9.0	12	8.2	7.1	5.6	5.6	6.8	11	6.2
20	6.8	13	6.5	14	9.0	8.2	6.8	5.6	5.6	6.8	7.1	6.2
21	5.9	9.4	6.5	46	12	8.1	6.8	5.6	5.6	6.2	15	6.2
22	5.9	8.6	18	9.0	8.7	7.8	6.8	5.9	5.3	6.2	7.1	6.2
23	5.9	7.1	7.4	7.8	18	7.8	6.8	5.6	5.3	6.2	6.2	6.2
24	6.8	8.6	9.4	9.0	13	7.8	6.8	5.6	5.3	6.4	5.9	6.5
25	5.9	8.6	6.5	7.1	17	7.8	6.8	5.6	5.3	6.2	5.3	6.2
26	5.9	8.6	6.2	6.8	19	8.2	6.8	5.6	5.3	6.2	4.6	6.2
27	5.9	12	7.1	6.8	15	8.3	6.8	6.8	5.3	6.4	4.8	6.2
28	7.4	17	6.2	6.6	9.6	8.3	6.8	5.9	5.3	6.2	4.8	6.5
29	7.1	24	5.8	6.6	---	8.2	6.8	5.6	5.3	6.2	4.8	5.9
30	5.9	57	5.6	6.5	---	8.2	6.8	5.6	7.4	6.2	4.8	6.2
31	5.9	---	5.4	6.4	---	8.1	---	5.6	---	6.2	4.6	---
TOTAL	186.5	475.1	293.1	277.7	457.7	323.9	250.8	208.7	167.7	255.2	195.9	275.5
MEAN	6.02	15.8	9.45	8.96	16.3	10.4	8.36	6.73	5.59	8.23	6.32	9.18
MAX	7.4	57	36	46	65	39	15	20	7.4	51	15	36
MIN	5.6	5.9	5.4	4.9	6.3	7.8	6.8	5.6	5.3	6.2	4.6	5.9
AC-FT	370	942	581	551	908	642	497	414	333	506	389	546

CAL YR 1978 TOTAL 3527.5 MEAN 9.66 MAX 73 MIN 5.3 AC-FT 7000
WTR YR 1979 TOTAL 3367.8 MEAN 9.23 MAX 65 MIN 4.6 AC-FT 6680

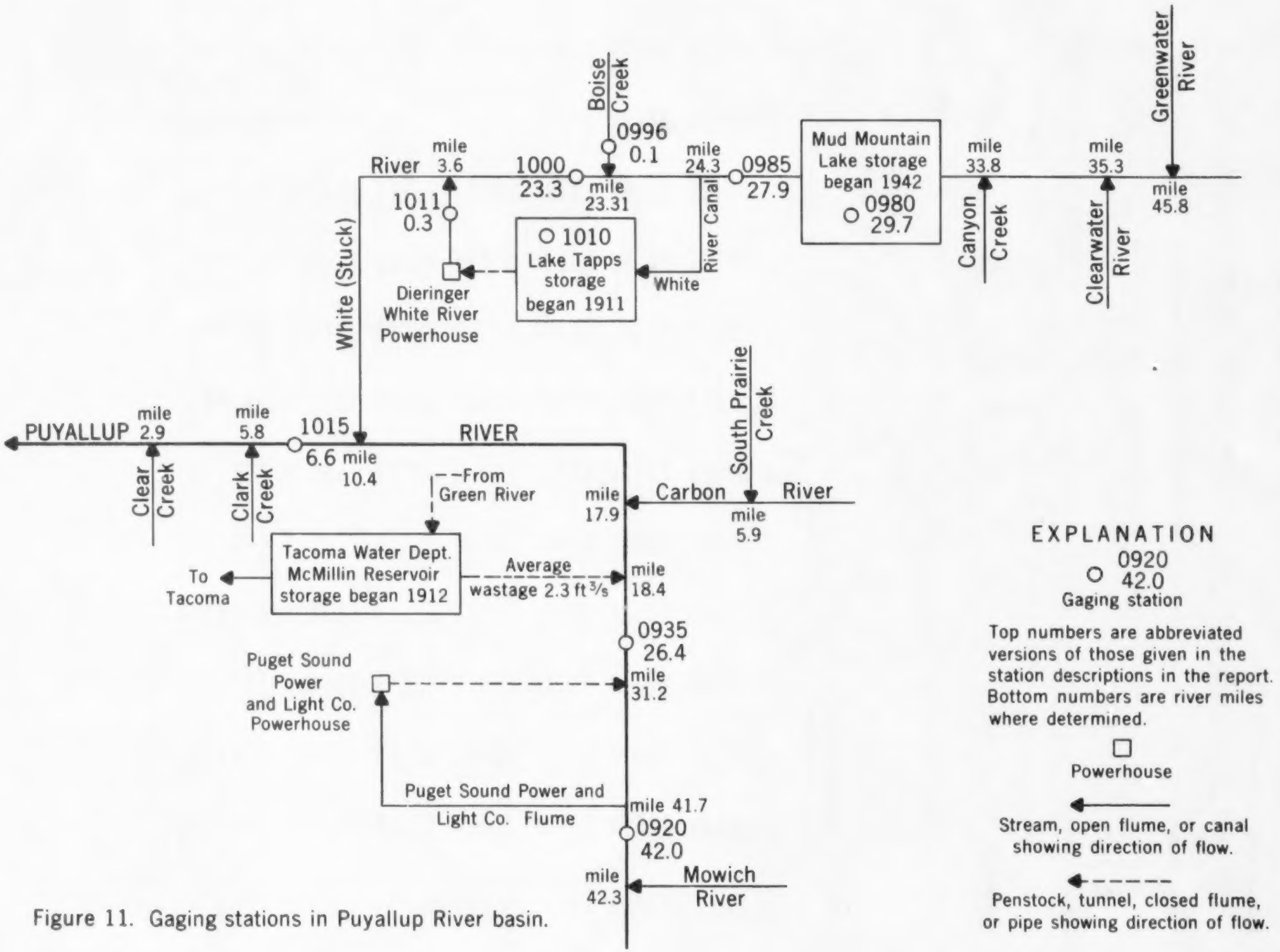
PUYALLUP
RIVER
mile 2.9
Clear Creek
mile 5.8
Clark Creek
1015
6.6 mile 10.4
White (Stuck)
River
mile 3.6
1011
0.3
Dieringer White River Powerhouse
1000
23.3
mile 23.31
0996
0.1
Boise Creek
O 1010
Lake Tapps storage began 1911
White
River Canal
mile 24.3
0985
27.9
Mud Mountain Lake storage began 1942
O 0980
29.7
mile 33.8
Canyon Creek
mile 35.3
Clearwater River
mile 45.8
Greenwater River
--From Green River
Tacoma Water Dept. McMillin Reservoir storage began 1912
To Tacoma
Average wastage 2.3 ft³/s
mile 17.9
Carbon River
South Prairie Creek
mile 5.9
mile 18.4
0935
26.4
mile 31.2
Puget Sound Power and Light Co. Powerhouse
Puget Sound Power and Light Co. Flume
mile 41.7
0920
42.0
mile 42.3
Mowich River
EXPLANATION
O 0920
42.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 11. Gaging stations in Puyallup River basin.

12092000 PUYALLUP RIVER NEAR ELECTRON, WA

LOCATION.--Lat 46°54'14", long 122°02'02", in SE¼NW¼ sec.3, T.16 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 1,000 ft (305 m) upstream from Puget Sound Power & Light Co.'s flume headworks, 0.3 mi (0.5 km) downstream from Mowich River, 9.8 mi (15.8 km) southeast of Electron, and at mile 42.0 (67.6 km).

DRAINAGE AREA.--92.8 mi^2 (240.4 km^2).

PERIOD OF RECORD.--October 1908 to September 1926, October 1926 to September 1933 (monthly discharge only, published in State of Washington Water-Supply Bulletin No. 6), October 1944 to September 1949, and October 1957 to current year.

REVISED RECORDS.--WSP 1092: 1946(M). WSP 1346: 1913, 1916-17(M), 1918-23, drainage area WSP 1566: 1945(M), 1947(P).

GAGE.--Water-stage recorder. Altitude of gage is 1,640 ft (500 m), from river-profile map. Prior to Jan. 1, 1913, nonrecording gage and Jan. 1, 1913, to Sept. 30, 1926, Oct. 1, 1944, to Sept. 30, 1949, and Oct. 1, 1957, to Nov. 22, 1959 (gage destroyed by flood), water-stage recorder, at sites within 125 ft (38 m) upstream at different datums.

REMARKS.--Records good except those for discharges during period of shifting control December 2 to January 8, which are poor. No regulation or diversion above station. Tacoma City Light radio telemeter at site.

AVERAGE DISCHARGE.--52 years, (1908-33, 1944-49, 1957-79) 529 ft^3/s (14.98 m^3/s), 77.41 in/yr (1,966 mm/yr), 383,300 acre-ft/yr (473 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft^3/s (306 m^3/s) Nov. 22, 1959, gage height, 11.9 ft (3.63 m) from flood marks, site and datum then in use, result of slope-area measurement; minimum daily discharge, 100 ft^3/s (2.83 m^3/s) Dec. 13, 14, 1972 during period of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,300 ft^3/s (65.1 m^3/s), after Dec. 1, from rating extended above 1,200 ft^3/s (34.0 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 6	0415	*2,200	62.3	*4.88	1.487

Minimum discharge, 136 ft (3.85 m^3/s) Jan. 31, Feb. 2, gage height, 2.26 ft (0.689 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	294	166	832	205	151	229	256	728	502	728	508	490
2	263	185	544	200	155	211	278	685	728	556	478	816
3	263	594	664	195	158	232	256	692	872	460	438	622
4	259	934	1010	190	162	490	298	872	856	449	385	360
5	245	421	650	185	235	1340	346	979	952	466	375	274
6	259	310	484	180	706	1930	375	840	800	466	355	259
7	270	421	385	175	864	1780	355	685	556	460	360	298
8	263	916	341	170	502	1140	350	601	454	496	375	490
9	256	484	350	170	601	768	365	544	484	608	405	550
10	245	346	332	320	587	629	341	490	601	880	460	449
11	245	270	538	220	562	580	370	454	706	580	454	365
12	208	238	370	200	768	550	405	460	671	514	421	341
13	208	217	314	185	925	508	514	514	532	395	432	370
14	229	202	375	178	587	508	432	643	421	370	472	410
15	245	197	314	174	443	629	385	752	375	472	438	484
16	245	259	278	166	365	594	365	800	350	601	526	449
17	245	400	259	164	337	502	375	728	346	768	472	375
18	235	290	238	160	346	432	355	720	328	848	416	438
19	217	266	210	176	294	385	328	736	385	768	400	460
20	223	229	210	217	259	360	306	752	390	657	375	449
21	190	211	210	314	242	346	306	880	355	615	478	385
22	176	197	230	238	226	332	323	961	337	490	449	310
23	174	190	250	211	217	328	341	1050	375	460	400	302
24	259	185	540	200	229	332	370	916	466	454	324	319
25	202	178	360	187	302	328	395	889	562	449	342	346
26	185	174	290	178	355	306	460	1010	601	490	355	319
27	174	270	250	174	302	306	608	848	657	508	342	286
28	176	768	230	168	256	290	713	608	685	490	332	328
29	187	550	220	162	---	278	736	466	692	460	375	260
30	176	988	215	155	---	266	744	395	636	526	380	249
31	168	---	210	151	---	256	---	390	---	568	328	---
TOTAL	6984	11056	11703	5968	11136	17165	12051	22088	16675	17052	12650	11953
MEAN	225	369	378	193	398	554	402	713	556	550	408	395
MAX	294	988	1010	320	925	1930	744	1050	952	880	526	816
MIN	168	166	210	151	151	211	256	390	328	370	324	249
CFSM	2.43	3.98	4.07	2.08	4.29	5.97	4.33	7.68	5.99	5.93	4.40	4.26
IN.	2.80	4.43	4.69	2.39	4.46	6.88	4.83	8.85	6.68	6.84	5.07	4.75
AC-FT	13850	21930	23210	11840	22090	34050	23900	43810	33070	33820	25090	23510

CAL YR 1978 TOTAL 150052 MEAN 411 MAX 1130 MIN 166 CFSM 4.43 IN 60.15 AC-FT 297600
WTR YR 1979 TOTAL 156381 MEAN 428 MAX 1930 MIN 151 CFSM 4.61 IN 62.69 AC-FT 310200

12093500 PUYALLUP RIVER NEAR ORTING, WA

LOCATION.--Lat 47°02'22", long 122°12'24", in SW¼SW¼ sec.17, T.18 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 600 ft (183 m) downstream from highway bridge, 4.0 mi (6.4 km) south of Orting, 8.5 mi (13.7 km) upstream from Carbon River, and at mile 26.4 (42.5 km).

DRAINAGE AREA.--172 mi² (445 km²).

PERIOD OF RECORD.--September 1931 to current year.

REVISED RECORDS.--WSP 932: 1937-39. WSP 962: 1934. WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 352.5 ft (107.44 m) National Geodetic Vertical Datum of 1929. Prior to Feb. 6, 1946, at site 600 ft (183 m) upstream at datum 8.93 ft (2.722 m) higher. Supplementary water-stage recorder 200 ft (61 m) upstream at datum 7.1 ft (2.16 m) higher than present gage datum used at times during period in 1942-46. Feb. 6, 1946, to Mar. 12, 1965, at present site at datum 5.0 ft (1.52 m) higher.

REMARKS.--Records good except those less than 250 ft³/s (7.08 m³/s), which are fair. Up to 400 ft³/s (11.3 m³/s) diverted for Electron powerplant of Puget Sound Power & Light Co., which is returned to river 4.8 mi (7.7 km) above gage. Minor regulation by Electron powerplant.

AVERAGE DISCHARGE.--48 years, 710 ft³/s (20.11 m³/s) 56.06 in/yr (1,424 mm/yr), 514,400 acre-ft/yr (634 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft³/s (433 m³/s) Nov. 20, 1962, gage height, 11.82 ft (3.603 m) present datum, from rating curve extended above 8,600 ft³/s (244 m³/s) on basis of slope-area measurement at gage height 12.25 ft (3.734 m) present datum; minimum discharge, 25 ft³/s (0.71 m³/s) Nov. 28, 1952; minimum daily, 59 ft³/s (1.67 m³/s) Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 6	2400	*3,820	108	*6.89	2.100

Minimum discharge, 125 ft³/s (3.54 m³/s) Oct. 25, gage height, 3.36 ft (1.024 m); minimum daily discharge, 204 ft³/s (5.78 m³/s) Nov. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	390	204	1680	300	230	468	392	802	584	870	584	528
2	360	208	1140	290	220	438	944	766	784	721	520	940
3	350	604	986	280	240	445	504	748	920	576	504	920
4	346	1110	1380	270	290	649	496	900	920	552	445	552
5	326	630	1040	260	501	1530	552	1010	990	568	424	431
6	336	482	825	250	1260	2100	576	930	910	568	410	417
7	352	634	697	250	2160	2020	552	802	676	560	390	638
8	341	1130	624	240	1220	1380	520	748	552	576	424	667
9	337	691	630	240	1150	1030	560	676	560	667	452	694
10	320	526	682	458	1140	870	528	616	676	990	520	528
11	320	427	872	409	1130	703	600	568	775	748	536	380
12	272	370	722	360	1370	739	667	560	748	667	496	350
13	281	327	616	341	1520	694	840	576	632	544	528	380
14	284	365	692	319	1130	667	775	685	512	496	552	484
15	310	289	670	312	860	784	703	784	466	560	520	496
16	308	327	572	282	730	784	650	820	424	667	632	488
17	310	612	530	272	667	694	676	766	438	703	576	386
18	298	489	487	264	703	616	667	748	484	870	480	431
19	276	511	440	282	616	552	616	740	452	860	480	480
20	283	435	430	373	560	512	960	757	480	775	424	480
21	248	300	430	715	520	400	520	840	438	757	536	424
22	216	346	480	591	480	459	528	960	484	616	552	340
23	208	325	480	476	459	445	520	1050	424	576	473	315
24	314	312	920	444	452	445	544	930	512	560	392	325
25	250	302	720	393	552	445	552	880	616	568	386	350
26	236	301	610	351	667	410	592	1030	667	592	404	335
27	212	289	510	336	632	424	703	950	712	616	410	300
28	212	1210	490	320	562	417	811	748	730	584	392	356
29	251	917	410	299	---	392	820	600	766	520	431	273
30	230	1570	350	254	---	386	820	512	703	560	459	264
31	212	---	310	240	---	362	---	480	---	624	392	---
TOTAL	8985	16074	21395	10493	22020	22530	18417	23978	18875	20209	14740	13664
MEAN	290	536	690	338	787	727	614	773	629	652	475	455
MAX	390	1570	1680	715	2160	2100	960	1050	990	990	632	940
MIN	208	204	310	240	220	362	392	480	424	496	386	264
CFSM	1.69	3.12	4.01	1.97	4.58	4.23	3.57	4.49	3.66	3.79	2.76	2.65
IN.	1.94	3.48	4.62	2.27	4.76	4.87	3.98	5.19	4.08	4.37	3.19	2.96
AC-FT	17820	31880	42360	20810	43680	44700	36520	47560	37440	40080	29240	27100

CAL YR 1978 TOTAL 197841 MEAN 542 MAX 1680 MIN 204 CFSM 3.15 IN 42.79 AC-FT 392400
WTR YR 1979 TOTAL 211354 MEAN 579 MAX 2160 MIN 204 CFSM 3.37 IN 45.71 AC-FT 419200

12093510 PUYALLUP RIVER AT ORTING, WA

LOCATION.--Lat 47°05'21", long 122°12'43", in SE¼NE¼ sec. 31, T.19 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on Calistoga Street bridge, 0.7 mi (1.1 km) south of Orting, and at mile 22.2 (35.7 km).

PERIOD OF RECORD.--Water years 1976 to current year.

REMARKS.--Water discharge obtained by routing flow from upstream gaging station; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
11...	1150	362	78	7.3	10.1	35	25
NOV							
08...	1130	1190	49	7.3	8.0	85	55
DEC							
06...	1200	919	53	7.3	3.4	50	6.0
JAN , 1979							
31...	1315	240	69	7.0	--	25	4.0
FEB							
22...	1215	400	63	7.5	4.5	65	3.0
MAR							
14...	1200	676	55	7.4	6.6	25	3.0
APR							
18...	1145	650	55	7.6	7.1	45	3.0
MAY							
23...	1120	1060	43	7.5	10.4	40	20
JUN							
20...	1140	400	53	7.7	10.0	25	4.0
JUL							
11...	1125	766	41	7.6	11.7	75	49
AUG							
08...	1135	410	49	7.5	12.7	160	240
SEP							
06...	1140	424	49	--	12.0	30	28

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
11...	11.2	.02	.03	.040	.01	.03
NOV						
08...	11.4	.24	.05	.130	.00	.00
DEC						
06...	13.4	.29	.01	.010	.03	.09
JAN , 1979						
31...	14.2	.24	.01	.020	.00	.00
FEB						
22...	12.9	.34	.01	.020	.01	.03
MAR						
14...	12.3	.15	.01	.000	.00	.00
APR						
18...	12.4	.17	.01	.010	.01	.03
MAY						
23...	11.4	.05	.03	.030	.04	.12
JUN						
20...	11.5	.01	.01	.010	.00	.00
JUL						
11...	11.2	.03	.02	.070	.04	.12
AUG						
08...	10.5	.01	.01	.400	.00	.00
SEP						
06...	10.1	.05	.01	.030	.01	.03

12098000 MUD MOUNTAIN LAKE NEAR BUCKLEY, WA

LOCATION.--Lat 47°08'27", long 121°55'48", in NE¼NE¼ sec.17, T.19 N., R.7 E., Pierce County, Hydrologic Unit 17110014, on left bank of reservoir just upstream from Mud Mountain Dam on White River, 5 mi (8.0 km) southeast of Buckley, 5.6 mi (9.0 km) downstream from Clearwater River, and at mile 29.7 (47.8 km).

DRAINAGE AREA.--400 mi² (1,036 km²).

PERIOD OF RECORD.--October 1943 to current year. Monthend contents only October 1943 to September 1944, published in WSP 1316. Prior to October 1970, published as Mud Mountain Reservoir near Buckley.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Lake, for flood control, is formed by earth-fill dam. Embankment completed and storage began on small scale in 1942. Capacity, 106,000 acre-ft (131 hm³) between elevations 895 ft (272.8 m), invert of outlet tunnel, and 1,215 ft (370.3 m), spillway crest. Storage is dissipated as soon after a flood as is possible, without creating damaging flows downstream, in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Records of lake elevations and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed since dam was completed, 55,880 acre-ft (68.9 hm³) Aug. 23, 1974, elevation, 1,150.0 ft (350.52 m); no pool at times in some years.

EXTREMES FOR CURRENT YEAR.-- Maximum contents observed, 23,559 acre-ft (29.0 hm³) June 6, elevation, 1,087.2 ft (331.38 m); minimum observed, 48 acre-ft (59,200 m³) Dec. 20, elevation, 909.2 ft (277.12 m).

Capacity table (elevation, in feet, and total contents, acre-feet)
(Based on area maps by Corps of Engineers in 1939)

907	39	930	191	970	1,520	1,070	17,380
910	52	935	266	985	2,310	1,100	29,050
915	77	940	366	1,000	3,830	1,150	55,880
920	107	945	491	1,020	6,260		
925	141	955	817	1,040	9,680		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	1090	1930	743	168	196	726	2465	20887	971	208	2215
2	72	1755	1032	715	145	578	950	2166	21361	1911	208	2375
3	72	1879	848	1467	323	1224	1175	1963	22731	1123	698	2684
4	72	2215	2496	840	578	1841	958	1786	23083	191	1167	2420
5	71	2089	4929	1023	430	2458	1365	2117	23475	1283	1648	2273
6	71	1917	3633	1448	186	3868	1068	2159	23559	1737	1956	2237
7	72	1707	2435	1208	2465	7369	1161	2145	22306	1613	2145	2215
8	72	2267	1273	1138	1091	8527	921	3435	20517	1841	2159	2244
9	72	2145	167	1258	366	6474	1010	4439	17435	2089	2166	2331
10	72	1983	163	1456	1185	6014	768	5316	15659	2166	2187	2294
11	72	1868	413	1308	1283	5698	684	4893	14125	2302	2215	2194
12	72	1976	168	1234	856	5051	348	4518	13459	1368	2145	2145
13	72	1816	153	1027	1268	6408	413	4785	15637	266	2152	2145
14	71	98	105	954	1258	6532	388	5887	16889	481	2201	2145
15	71	100	103	1068	134	5498	454	6758	14658	817	2194	2180
16	72	100	67	1195	941	4929	313	8656	12088	1016	2201	2258
17	72	124	65	1456	1188	4285	426	11058	10058	1767	2251	2237
18	72	123	72	1283	1539	3667	464	11947	8436	313	2215	2201
19	72	121	62	1195	1816	2981	371	13432	7483	451	2201	2229
20	72	117	48	1435	3510	1695	884	14455	6577	1462	2173	2244
21	72	117	929	1969	2550	338	1147	15697	4929	1983	2201	2251
22	72	114	1085	1943	1361	295	1588	16585	4126	2029	2208	2302
23	72	113	1081	126	135	313	1773	17837	3015	1989	2208	2251
24	72	112	1522	127	146	154	1185	18833	2542	1448	2159	2251
25	72	112	1879	52	454	299	732	19212	2947	413	2159	2229
26	72	108	2049	83	774	241	1044	20122	2215	131	2180	2244
27	72	104	2076	84	389	631	1816	21324	1585	109	2265	2229
28	72	151	3102	96	241	1613	2152	22115	594	96	2237	2222
29	884	134	2089	95	---	1748	2273	21811	856	438	2229	2222
30	1671	548	1209	89	---	854	2308	21547	603	787	2237	2159
31	1879	---	802	141	---	677	---	20734	---	226	2222	---
MAX	1879	2267	4929	1969	3510	8527	2308	22115	23559	2302	2265	2684
MIN	71	98	48	52	134	154	313	1786	594	96	208	2145
††	976.2	966.9	955.5	927.0	931.4	952.0	984.1	1,080.0	955.5	931.7	981.0	980.2
†	1,892	1,355	761	158	210	708	2,443	20,807	836	214	2,215	2,159
‡	+1,816	-537	-594	-603	+52	+498	+1,735	+18,364	-19,971	-622	+2,001	-56

CAL YR 1978.............................‡ -1,433
WTR YR 1979.............................‡ +2,083

†† Monthend estimated elevation, in feet, at 2400 hours.
† Monthend estimated contents, in acre-feet.
‡ Change in contents, in acre-feet.

12098500 WHITE RIVER NEAR BUCKLEY, WA

LOCATION.--Lat 47°09'05", long 121°56'15", in SW¼NW¼ sec.8, T.19 N., R.7 E., King County, Hydrologic Unit 17110014, on right bank 0.4 mi (0.6 km) upstream from Red Creek, 1.7 mi (2.7 km) downstream from Mud Mountain Dam, 3.8 mi (6.1 km) east of Buckley, 7.4 mi (11.9 km) downstream from Clearwater River and at mile 27.9 (44.9 km).

DRAINAGE AREA.--401 mi² (1,039 km²).

PERIOD OF RECORD.--October 1928 to November 1933, October 1938 to current year. Water temperatures March 1971 to September 1972, sediment records November 1971 to November 1972.

REVISED RECORDS.--WSP 1247: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Oct. 26 to Dec. 9, 1928, nonrecording gage and Dec. 9, 1928, to Nov. 30, 1933, water-stage recorder, at site 3 mi (4.8 km) upstream at different datum. Nov. 26, 1938, to Feb. 14, 1939, nonrecording gage at present site and datum.

REMARKS.--Records good except those below 100 ft³/s (2.83 m³/s), which are poor. Flow regulated by Mud Mountain Lake (see sta 12098000) for flood control. Storage is not retained and observed annual runoff closely represents natural runoff of basin. No diversion above station. Tacoma City Light radio telemeter at station.

COOPERATION.--Water-stage recorder inspected by employees of Corps of Engineers.

AVERAGE DISCHARGE.--46 years (water years, 1929-33, 1939-79), 1,455 ft³/s (41.21 m³/s) 49.24 in/yr (1,251 mm/yr), 1,053,000 acre-ft/yr (1,300 hm³/yr); adjusted for storage since December 1943.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft³/s (481 m³/s) Feb. 26, 1932, gage height, 17.5 ft (5.33 m), site and datum then in use, from rating curve extended above 3,500 ft³/s (99.1 m³/s); probably no flow for part of each day Oct. 1, 2, 7, 8, Nov. 14, Dec. 1, 5, 15, 1958, Jan. 3, Mar. 24, June 8, Aug. 19, 1959; minimum daily, 59 ft³/s (1.67 m³/s) June 25, 1957, Mar. 26, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 reached a stage of 23.4 ft (7.13 m), from floodmarks, at former site, discharge, 28,000 ft³/s (793 m³/s), from rating curve extended above 3,500 ft³/s (99.1 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,280 ft³/s (150 m³/s) Feb. 7, elevation, 805.05 ft (245.379 m); minimum, 81 ft³/s (2.29 m³/s) Jan. 25; minimum daily, 280 ft³/s (7.93 m³/s) Oct. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	706	402	3590	610	525	920	900	2410	1370	1150	858	676
2	725	404	2090	850	440	832	924	2300	1300	1300	774	942
3	705	770	1230	1090	490	752	918	2300	1710	1260	665	1300
4	670	1440	2440	1070	535	1160	1060	2350	2080	888	605	882
5	640	1200	2100	904	744	2320	1210	2550	2290	870	570	692
6	600	912	2090	1020	1310	3610	1540	2500	2590	1070	615	654
7	600	864	1060	976	3960	4150	1350	1930	2560	981	692	610
8	595	1710	1380	952	2300	3900	1210	1530	2500	1020	709	692
9	585	1400	1180	920	1640	2930	1240	1420	2640	1070	698	768
10	580	1100	1090	832	2210	2060	1360	1610	2460	970	732	687
11	580	984	1690	776	2300	2000	1330	1670	2450	1570	762	575
12	560	736	1510	768	2520	1660	1290	1490	881	1300	744	520
13	520	1990	1300	696	2850	1400	1460	1320	1160	995	762	501
14	524	676	1460	632	2550	1980	1600	1470	2190	846	762	515
15	520	600	1410	584	1560	2150	1340	1490	2410	882	720	570
16	532	416	1240	545	1400	2170	1260	1400	2160	848	768	632
17	520	1000	1160	578	1210	2030	1230	1680	1800	1300	816	600
18	500	1770	1070	566	1080	1870	1190	1750	1610	1280	738	565
19	500	1430	976	510	762	1950	1060	1640	1540	1030	703	590
20	496	1160	824	510	936	1720	948	1540	1750	816	690	610
21	600	960	920	936	1430	1390	936	1870	1650	1030	744	565
22	460	840	784	1270	1250	1200	918	2050	1490	936	786	535
23	460	752	832	920	928	1270	1230	2300	1450	1000	692	492
24	576	600	1340	555	856	1270	1360	2420	1200	1160	615	474
25	512	632	1290	668	976	1280	1200	2210	1450	936	610	478
26	484	570	920	608	1340	1170	1230	2150	1660	876	626	492
27	464	500	800	572	1300	976	1560	2120	1640	888	714	474
28	406	2300	1140	525	1200	1140	2050	2000	1390	876	681	478
29	280	2270	1260	505	---	1200	2160	2040	1400	786	676	465
30	339	3110	1140	452	---	1040	2250	1990	1250	870	692	424
31	416	---	750	480	---	924	---	1620	---	858	659	---
TOTAL	16655	34176	42066	22880	40762	54782	39154	59120	54191	31714	21886	18458
MEAN	537	1139	1357	738	1456	1767	1305	1907	1806	1023	706	615
MAX	706	3110	3590	1270	3960	4150	2250	2550	2640	1570	858	1300
MIN	280	402	750	452	440	752	900	1320	881	786	570	424
AC-FT	33040	67790	83440	45380	80850	108700	77660	117300	107500	62900	43410	36610
*	+1,816	-537	-584	-603	+52	+498	+1,735	+18,364	-19,971	-622	+2,001	-56
MEAN‡	567	1,130	1,373	728	1,457	1,776	1,335	2,206	1,471	1,013	738	614
CFSM‡	1.41	2.82	3.42	1.82	3.63	4.43	3.33	5.50	3.67	2.53	1.84	1.53
IN.‡	1.63	3.14	3.95	2.09	3.78	5.11	3.71	6.35	4.09	2.91	2.12	1.71
AC-FT‡	34,850	67,250	84,430	44,780	80,900	109,200	79,400	135,700	87,530	62,280	45,410	36,550

CAL YR 1978: TOTAL 423,832 MEAN 1,161 MAX 3,590 MIN 280 AC-FT 840,700
DO......: MEAN‡ 1,159 CFSM‡ 2.89 IN‡ 39.25 AC-FT‡ 839,300
WTR YR 1979: TOTAL 436,644 MEAN 1,196 MAX 4,150 MIN 280 AC-FT 866,100
DO......: MEAN‡ 1,199 CFSM‡ 2.99 IN‡ 40.60 AC-FT‡ 868,280

* Change in contents, in acre-feet, in Mud Mountain Lake, furnished by Corps of Engineers.

‡ Adjusted for change in contents in Mud Mountain Lake.

12099600 BOISE CREEK AT BUCKLEY, WA

LOCATION.--Lat 47°10'34", long 122°01'02", in NE¼SE¼ sec.34, T.20 N., R.6 E., King County, Hydrologic Unit 17110014, on right bank at upstream side of county road bridge, 1.0 mi (1.6 km) northeast of Buckley, and at mile 0.1 (0.2 km).

DRAINAGE AREA.--15.4 mi² (39.9 km²).

PERIOD OF RECORD.--March 1977 to current year. Chemical analyses January 1963 to September 1964, October 1972 to September 1973.

GAGE.--Water-stage recorder. Altitude of gage is 640 ft (195 m), from topographic map.

REMARKS.--Records good. Flow partly regulated by millpond at mile 5.6 (9.0 km). Diversions above station for domestic and industrial use. Interbasin diversion from Scatter Creek of about 2 ft³/s (0.057 m³/s) during low flow periods enters Boise Creek above millpond.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 408 ft³/s (11.6 m³/s) Dec. 2, 1977, gage height, 2.95 ft (0.899 m); minimum, 1.7 ft³/s (0.12 m³/s) Sept. 19, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 398 ft³/s (11.3 m³/s) Feb. 6, gage height, 2.93 ft (0.893 m); minimum, 1.7 ft³/s (0.05 m³/s) Sept. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	9.3	298	23	14	50	27	22	11	30	5.6	6.6
2	17	11	145	22	13	41	36	22	11	18	5.8	14
3	15	53	87	20	12	45	31	20	10	12	5.6	17
4	14	76	111	19	23	71	45	23	9.5	11	6.1	11
5	14	38	87	18	41	105	68	31	12	10	6.4	7.5
6	13	27	63	17	157	152	47	29	11	9.2	5.6	6.9
7	13	31	46	15	157	140	39	23	11	8.9	5.3	6.7
8	12	76	35	13	96	101	37	22	9.8	8.9	5.3	8.6
9	11	62	42	13	60	80	46	23	9.8	9.8	5.3	13
10	11	42	42	30	78	63	54	21	9.5	13	5.3	11
11	11	32	87	23	92	53	82	19	8.9	13	5.6	8.0
12	10	27	60	23	158	45	76	19	8.3	13	5.6	6.7
13	10	22	46	21	110	40	91	19	9.2	10	5.6	6.6
14	10	19	68	19	96	38	79	18	8.9	9.5	5.3	5.8
15	9.8	18	48	18	74	50	74	16	8.9	8.9	5.3	6.1
16	9.3	26	40	17	66	47	67	19	10	8.0	5.8	6.4
17	8.9	48	35	17	60	42	60	17	10	8.0	6.4	5.6
18	9.1	48	33	16	95	38	49	17	9.5	7.5	6.1	4.8
19	8.9	42	29	18	92	35	43	16	10	6.9	6.7	5.0
20	10	29	26	33	45	32	35	16	9.5	6.9	5.8	5.8
21	10	26	27	137	45	32	33	14	8.9	7.2	6.9	5.8
22	9.6	22	36	47	38	31	31	13	8.3	7.5	6.9	5.8
23	9.1	21	33	34	51	31	29	13	8.9	7.2	6.4	6.1
24	20	19	38	36	51	29	27	13	8.9	6.9	5.8	5.6
25	11	18	34	27	51	29	28	13	7.7	7.2	5.8	5.3
26	10	17	30	23	85	28	26	13	7.2	6.9	5.8	5.6
27	9.5	24	26	22	73	27	26	14	6.9	5.8	5.8	5.6
28	10	82	24	20	59	27	26	14	7.2	6.4	5.3	6.1
29	12	98	27	17	---	26	26	12	7.5	6.9	5.3	5.6
30	12	264	26	16	---	25	23	11	10	6.1	5.3	6.4
31	9.7	---	24	15	---	25	---	11	---	5.8	5.6	---
TOTAL	359.9	1321.3	1753	789	1910	1578	1361	553	279.3	296.4	179.4	221.0
MEAN	11.6	44.0	56.5	25.5	68.2	50.9	45.4	17.8	9.31	9.56	5.79	7.37
MAX	20	264	298	137	158	152	91	31	12	30	6.9	17
MIN	8.9	9.3	24	13	12	25	23	11	6.9	5.8	5.3	4.8
AC-FT	714	2620	3480	1560	3790	3130	2700	1100	554	588	356	438

CAL YR 1978 TOTAL 10508.7 MEAN 28.8 MAX 298 MIN 6.4 AC-FT 20840
WTR YR 1979 TOTAL 10601.3 MEAN 29.0 MAX 298 MIN 4.8 AC-FT 21030

12100000 WHITE RIVER AT BUCKLEY, WA

LOCATION.--Lat 47°10'28", long 122°01'09", in NE¼SE¼ sec.34, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 150 ft (46 m) downstream from railway bridge, 200 ft (61 m) downstream from Boise Creek, 1.0 mi (1.6 km) northeast of Buckley, and at mile 23.3 (37.5 km).

DRAINAGE AREA.--427 m² (1,106 km²).

PERIOD OF RECORD.--July 1910 to November 1911, April 1977 to current year. February 1913 to September 1938 (records not equivalent as they include flow of White River flume, see REMARKS).

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 620 ft (189 m), from topographic map. June 8, 1910 to Nov. 30, 1911, nonrecording gage at site 150 ft (46 m) upstream at different datum, and Jan. 18, 1913 to Sept. 30, 1938, water-stage recorder at site 100 ft (30 m) upstream at National Geodetic Vertical Datum of 1929 (levels by Puget Sound Power and Light Co.).

REMARKS.--Records good except those for period of no gage-height record Nov. 24-27, Dec. 1-4, and periods of ice effect Dec. 29-Jan. 8, 30, and Feb. 1, which are poor. Since November 1911, White River flume has diverted from left bank 1.0 mi (1.6 km) upstream for storage in Lake Tapps (see sta 12101000), average flow diverted for the period 1963-79 was 928 ft³/s (26.3 m³/s). Water is returned to White River 19.7 mi (31.7 km) downstream via the Lake Tapps Diversion (see sta 12101100) after power development at Dieringer-White powerplant. Since 1942, flow regulated by Mud Mountain Lake (see sta 12098000) for flood control.

EXTREMES FOR PERIOD OF RECORD.--During water years 1911-12, 1914-19, 1921-23, 1935-38, maximum discharge, 23,100 ft³/s (654 m³/s) Dec. 18, 1917, during period of combined flows; minimum, not determined. River only after April 1977, maximum discharge, 14,300 ft³/s (405 m³/s) Dec. 2, 1977, gage height, 9.11 ft (2.777 m); minimum, 27 ft³/s (0.76 m³/s) July 30, 31, 1978, gage height, 2.40 ft (0.732 m); minimum daily, 31 ft³/s (0.88 m³/s) July 30, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,200 ft³/s (90.6 m³/s) Feb. 7, gage height, 5.95 (1.814 m); minimum, 32 ft³/s (0.91 m³/s) Feb. 2, gage height, 2.46 ft (0.750 m); minimum daily, 41 ft³/s (1.16 m³/s) Aug. 28, Sept. 17, 18, 24, 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	51	1200	54	48	80	63	690	56	70	1000	43
2	53	52	900	55	51	77	76	592	55	60	922	58
3	52	93	760	56	84	79	70	613	249	51	810	57
4	52	132	870	59	91	120	82	669	390	49	754	49
5	50	69	641	58	108	706	99	922	613	51	655	44
6	50	63	448	57	240	1930	87	868	980	49	345	45
7	49	67	267	55	2210	2230	79	730	990	47	69	45
8	49	360	86	65	706	2210	70	1620	970	51	57	49
9	50	102	72	79	365	1510	79	990	1060	51	61	53
10	51	74	72	97	706	365	86	130	859	244	53	50
11	51	66	193	79	842	360	108	66	826	141	45	45
12	50	61	91	63	922	162	99	63	204	200	43	45
13	50	60	80	63	1130	74	120	61	61	86	45	44
14	141	56	95	58	1030	253	102	66	460	49	44	44
15	50	53	82	57	193	425	99	60	802	115	43	44
16	50	63	75	56	93	514	97	63	502	980	47	44
17	50	84	72	56	87	335	93	93	160	1340	43	41
18	50	75	69	55	84	147	87	66	52	1450	43	41
19	50	72	66	56	82	253	84	60	52	1160	44	44
20	51	61	478	70	80	104	82	58	82	950	43	46
21	51	60	69	179	79	61	79	307	55	1160	47	44
22	50	57	77	97	72	61	75	360	51	1000	45	44
23	50	56	76	84	80	66	75	662	47	1100	44	42
24	60	49	84	86	82	1360	69	786	49	1270	43	41
25	52	48	70	79	87	1410	69	557	51	1070	44	41
26	52	47	67	74	115	1310	67	490	49	1000	42	42
27	50	90	67	72	95	1130	69	436	56	1030	44	42
28	52	285	63	69	87	1250	258	526	47	1020	41	44
29	84	600	61	67	---	931	380	509	47	922	42	42
30	55	1500	60	60	---	58	502	244	50	1000	42	42
31	53	---	57	50	---	58	---	91	---	1000	42	---
TOTAL	1713	4506	7366	2165	10009	19629	3403	13554	9933	18926	5642	1355
MEAN	55.3	150	238	69.8	357	633	113	437	331	611	182	45.2
MAX	141	1500	1200	179	2210	2230	502	1620	1060	1450	1000	58
MIN	49	47	57	50	48	58	63	58	47	47	41	41
AC-FT	3400	8940	14610	4290	19850	38930	6750	26880	19700	37540	11190	2690

CAL YR 1978 TOTAL 107840 MEAN 295 MAX 1800 MIN 31 AC-FT 213900
WTR YR 1979 TOTAL 98201 MEAN 269 MAX 2230 MIN 41 AC-FT 194800

12101000 LAKE TAPPS NEAR SUMNER, WA

LOCATION.--Lat 47°14'28", long 122°11'26", in NE¼NE¼ sec.8, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, 1.7 mi (2.7 km) east of Dieringer and 3.5 mi (5.6 km) northeast of Sumner.

PERIOD OF RECORD.--November 1911 to current year. October 1934 to October 1950, change in contents published with records for Puyallup River at Puyallup. Monthend contents only November 1911 to September 1950, published in WSP 1316.

GAGE.--Nonrecording gage. Datum of gage is 0.7 ft (0.2 m) National Geodetic Vertical Datum of 1929 (levels by Puget Sound Power & Light Co.).

REMARKS.--Reservoir is formed by a diked natural lake into which a large part of the low-water flow of White River is diverted. Construction of dike began June 1910; storage began in 1911. Usable capacity (based on 1959 resurvey; capacity table dated July 28, 1959 put into use Oct. 1, 1958), 46,600 acre-ft (57.5 hm^3) between gage heights of 515 ft (157.0 m) normal minimum pool, and 543 ft (165.5 m), normal maximum pool. Dead storage unknown. Figures given herein represent usable contents. Reservoir is used for power development at the Dieringer White River powerplant.

COOPERATION.--Gage-height record and contents curve furnished by Puget Sound Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 51,710 acre-ft (63.8 hm^3) June 30, 1958, gage height, 541.57 ft (165.071 m), capacity table dated Jan. 19, 1920; maximum gage height observed, 543.04 ft (165.519 m) June 19, 1967; minimum contents observed, not determined (below normal minimum pool) Apr. 3, 1978, gage height, 514.90 ft (156.942 m); minimum gage height, 505.70 ft (154.137 m) June 24, 1912.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 46,655 acre-ft (57.5 hm^3) July 15, gage height, 543.00 ft (165.506 m); minimum observed, 1,624 acre-ft (2.00 hm^3) Feb. 2, gage height, 516.71 ft (157.493 m).

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Gage Height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	542.11	44,414	------
Oct. 31	540.44	40,357	-4,057
Nov. 30	530.14	30,501	-9,856
Dec. 31	539.20	37,435	+6,934
CAL YR 1978	------	------	+6,451
Jan. 31	517.40	2,296	-35,139
Feb. 28	529.76	18,178	+15,882
Mar. 31	529.27	17,369	-809
Apr. 30	534.39	26,821	+9,452
May 31	542.01	44,162	+17,341
June 30	541.98	44,088	-74
July 31	542.36	45,043	+955
Aug. 31	543.00	46,655	+1,612
Sept. 30	542.46	45,295	-1,360
WTR YR 1979	------	------	+881

12101100 LAKE TAPPS DIVERSION AT DIERINGER, WA

LOCATION.--Lat 47°14'18", long 122°13'37", in SW¼NW¼ sec.7, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 850 ft (259 m) downstream from White River powerplant at Dieringer and 1,400 ft (427 m) upstream from mouth.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 60 ft (18 m), from topographic map.

REMARKS.--Records excellent. Flow regulated by White River powerplant.

AVERAGE DISCHARGE.--21 years, 982 ft³/s (27.81 m³/s), 711,500 acre-ft/yr (887 hm³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft³/s (71.6 m³/s) Jan.29, 1965, gage height, 6.23 ft (1.899 m); maximum gage height, 6.72 ft (2.048 m) Dec. 3, 1977 (backwater from White River); minimum, 7.2 ft³/s (0.20 m³/s) Sept. 29, 1967, gage height, 0.20 ft (0.061 m); minimum daily, 10 ft³/s (0.28 m³/s) Aug. 21, 22, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,000 ft³/s (56.6 m³/s) June 17, gage height, 5.20 ft (1.585 m); maximum gage height, 5.21 ft (1.588 m) Dec. 13; minimum, 11 ft³/s (0.31 m³/s) on all or part of each day Oct. 1, 6, 7, 11-17, minimum gage height, 0.44 ft (0.134 m) July 16-20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	496	668	825	1520	556	1580	417	1050	1640	1310	20	965
2	995	333	600	1430	556	1580	1600	728	1630	1460	22	1230
3	1160	1100	1000	1640	15	1580	1610	664	1210	1140	59	1370
4	1130	1110	1400	1610	115	1580	1600	760	1490	1040	25	1190
5	756	1540	1600	1600	149	1580	1490	1620	1630	1050	26	880
6	716	1150	1000	1540	16	1580	1510	1160	1630	462	385	624
7	12	850	960	1600	930	1580	1210	1590	1630	27	26	556
8	12	1080	1150	1600	572	1580	492	264	1850	970	508	544
9	12	1130	1430	1590	15	1580	1580	484	1960	1090	476	612
10	12	1600	915	1590	15	1320	1600	207	1960	1160	935	740
11	676	1420	1160	1400	15	920	1600	329	1790	1440	664	700
12	845	1280	1590	1420	16	1570	1600	910	1640	1330	378	656
13	875	1570	1630	1150	572	1600	1600	1290	915	920	805	584
14	134	1180	1610	1040	1600	1600	1600	736	1250	616	850	544
15	11	975	1280	1200	1610	1590	1600	1460	1380	732	724	504
16	720	1000	1540	1250	1600	1600	1600	1630	1350	64	532	504
17	624	995	925	1200	1600	1500	1600	1630	1990	15	980	632
18	596	676	1310	1230	1600	1210	1600	1630	1690	15	616	91
19	280	1270	1120	736	1600	1580	1480	1630	1690	15	756	576
20	403	1510	616	111	1600	1430	1600	1630	1680	15	736	656
21	775	1120	434	18	1600	1590	1540	1630	1680	15	1000	620
22	672	1250	201	770	1600	1590	173	1630	1680	15	572	616
23	488	1600	15	544	1600	995	427	1630	1680	16	620	26
24	469	1600	15	1210	1590	15	434	1630	1680	16	632	560
25	473	1600	910	1560	1590	16	810	1630	835	16	636	584
26	748	1600	1220	1560	1590	234	250	1630	1670	17	620	315
27	294	1410	1090	1170	1590	660	111	1640	1670	17	648	434
28	552	692	1640	830	1590	1590	19	1640	1670	18	536	628
29	524	920	1620	970	---	1570	102	1640	1670	18	427	568
30	708	980	1760	700	---	1040	1160	1640	1280	19	560	448
31	520	---	1610	664	---	139	---	1640	---	19	544	---
TOTAL	16696	35129	34336	36457	27502	39579	34023	39382	47520	15056	16318	18937
MEAN	539	1171	1108	1176	982	1277	1134	1270	1584	486	526	631
MAX	1160	1600	1760	1640	1610	1600	1610	1640	1990	1460	1000	1370
MIN	11	333	15	18	15	15	19	207	835	15	20	26
AC-FT	33120	69680	68110	72310	54550	78500	67480	78110	94260	29860	32370	37560

CAL YR 1978 TOTAL 359583 MEAN 985 MAX 2010 MIN 11 AC-FT 713200
WTR YR 1979 TOTAL 360935 MEAN 989 MAX 1990 MIN 11 AC-FT 715900

12101110 WHITE RIVER AT SUMNER, WA

LOCATION.--Lat 47°12'15", long 122°14'40", in NW¼SW¼ sec.24, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014, at Main Street bridge, 500 ft (153.4 m) west of Sumner city limits.

DRAINAGE AREA.--494 mi² (1,279 km²).

PERIOD OF RECORD.--Water years 1972, 1977 to current year.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
11...	1230	1420	65	7.3	14.0	20	8.0
NOV							
08...	1200	1780	49	7.2	10.1	15	16
DEC							
06...	1235	2220	72	7.2	4.6	70	9.0
JAN , 1979							
31...	1345	1230	63	7.0	1.8	30	11
FEB							
22...	1315	2010	72	7.3	4.3	50	8.0
MAR							
14...	1315	1980	58	7.3	7.1	25	9.0
APR							
18...	1220	1940	67	7.5	8.0	40	5.0
MAY							
23...	1200	2210	58	7.5	14.7	15	4.0
JUN							
20...	1235	1780	56	7.5	14.1	15	5.0
JUL							
11...	1200	1680	59	7.5	16.2	40	19
AUG							
08...	1205	815	73	7.2	14.7	40	36
SEP							
06...	1305	1000	69	7.8	16.5	20	26

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
11...	10.0	.04	.00	.020	.00	.00
NOV						
08...	10.4	.16	.01	.080	.01	.03
DEC						
06...	12.6	.47	.05	.030	.03	.09
JAN , 1979						
31...	13.2	.32	.01	.030	.00	.00
FEB						
22...	12.5	.49	.06	.020	.07	.21
MAR						
14...	12.0	.29	.01	.010	.01	.03
APR						
18...	12.0	.22	.02	.020	.07	.21
MAY						
23...	10.3	.05	.02	.020	.00	.00
JUN						
20...	10.0	.05	.01	--	.00	.00
JUL						
11...	9.8	.04	.02	.040	.04	.12
AUG						
08...	9.5	.05	.00	.070	.01	.03
SEP						
06...	9.8	.05	.01	.030	.03	.09

12101475 PUYALLUP RIVER AT MERIDIAN STREET BRIDGE AT PUYALLUP, WA

LOCATION.--Lat 47°12'10", long 122°17'33", on east line sec.22, T.20 N., R 4 E., Pierce County, Hydrologic Unit 17110014, at Meridian Street bridge in Puyallup, 1.7 mi (2.7 km) upstream from gaginr station (12101500) and at mile 8.3 (13.4 km).

DRAINAGE AREA.--948 mi² (2,455 km²).

PERIOD OF RECORD.--Water years 1968-71, 1974-75, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
11...	1345	1770	74	7.3	13.2	25	15
NOV							
08...	1300	4540	55	7.5	9.0	65	90
DEC							
06...	1305	4040	69	7.2	4.3	40	8.0
JAN , 1979							
31...	1415	2210	61	6.9	1.9	30	6.0
FEB							
22...	1400	3140	77	7.3	4.8	50	6.0
MAR							
14...	1350	3310	64	7.2	8.1	25	6.0
APR							
18...	1315	3440	60	7.5	8.0	45	4.0
MAY							
23...	1250	4300	52	7.5	12.6	25	8.0
JUN							
20...	1340	2920	53	7.5	13.0	25	6.0
JUL							
11...	1300	3360	52	7.5	14.4	60	25
AUG							
08...	1300	1750	69	7.4	15.2	65	56
SEP							
06...	1355	1910	60	7.5	15.3	40	26

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
11...	10.5	.05	.02	.030	.01	.03
NOV						
08...	11.0	.21	.01	.310	.00	.00
DEC						
06...	12.4	.43	.05	.060	.02	.06
JAN , 1979						
31...	13.3	.35	.07	.030	.00	.00
FEB						
22...	12.6	.53	.05	.020	.07	.21
MAR						
14...	12.2	.29	.02	.010	.01	.03
APR						
18...	12.2	.25	.02	.020	.07	.21
MAY						
23...	10.7	.07	.00	.020	.03	.09
JUN						
20...	10.5	.05	.02	--	.00	.00
JUL						
11...	10.4	.05	.01	.050	.04	.12
AUG						
08...	9.8	.09	.01	.140	.01	.03
SEP						
06...	9.2	.08	.03	.040	.03	.09

12101500 PUYALLUP RIVER AT PUYALLUP, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 47°12'31", long 122°19'33", in SE¼NW¼ sec.20, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014 on left bank 0.8 mi (1.3 km) upstream from bridge at Clark Creek, 2.0 mi (3.2 km) northwest of Puyallup City Hall, and at mile 6.6 (10.6 km).

DRAINAGE AREA.--948 mi^2 (2,455 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1914 to current year.

REVISED RECORDS.--WSP 832: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Dec. 3, 1919, at sites 1.2 mi (1.9 km) upstream and 900 ft (274 m) upstream at different datums. Dec. 3, 1919, to Nov. 9, 1935, at site 500 ft (152 m) upstream at datum 9.61 ft (2.929 m) higher than present datum.

REMARKS.--Water-discharge records good. All diverted water returned to river above gage. Large part of flow of White River (a tributary) diverted through Lake Tapps (see sta 12101000). Flood flow regulated by Mud Mountain Lake (see sta 12098000) on White River. Some pondage on tributaries and upper Puyallup River. Diurnal fluctuations caused by powerplants and glacial melt above station.

Since 1912 the city of Tacoma pipeline diversion from Green River has spilled as much as 123 ft^3/s (3.48 m^3/s) daily, and since 1957 an average of about 24 ft^3/s (0.70 m^3/s) per month into Puyallup River 0.5 mi (0.8 km) east of McMillin. Monthly mean discharge, in cubic feet per second, for the current year is as follows:

October.......	0.59	January......	1.66	April.......	2.43	July.......	0.72
November......	0.47	February.....	2.02	May.........	3.42	August.....	3.43
December......	5.72	March........	0.51	June........	0.97	September	5.49

AVERAGE DISCHARGE.--65 years, 3,375 ft^3/s (95.58 m^3/s) 2,445,000 acre-ft/yr (3,010 hm^3) adjusted for storage in Lake Tapps since October 1934, and Mud Mountain Lake October 1944 to September 1947.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft^3/s (1,610 m^3/s) Dec. 10, 1933, elevation, 31.0 ft (9.45 m), present datum; minimum, 306 ft^3/s (8.67 m^3/s) Sept. 25, 1955, elevation, 8.23 ft (2.509 m); minimum daily, 400 ft^3/s (11.3 m^3/s) Nov. 30, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,300 ft^3/s (292 m^3/s) Feb. 7, elevation, 15.50 ft (4.724 m); minimum, 630 ft^3/s (17.8 m^3/s) Oct. 28, elevation, 8.52 ft (2.597 m); minimum daily, 777 ft^3/s (22.0 m^3/s) Feb. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1720	1300	7360	2570	1250	3080	1350	3560	2880	3650	2100	1860
2	1870	1050	4460	2510	1210	2940	3190	3030	3240	3490	1940	2750
3	2060	2270	3420	2710	777	2920	3140	2950	3230	2670	1810	3520
4	2040	3690	5610	2640	934	3490	3060	3260	3790	2510	1630	2610
5	1700	3180	4620	2510	1600	5240	3130	4800	4110	2380	1500	1960
6	1590	2500	3450	2370	2480	8380	3200	4370	4560	1990	1750	1540
7	918	2050	2700	2460	9100	9020	2850	4260	4290	1340	957	1480
8	875	3540	2440	2640	4700	7200	2180	3590	4000	2250	1340	1700
9	861	2890	2920	2500	3130	5660	3120	3600	4220	2600	1480	1980
10	847	2860	2230	2960	3590	3630	3370	1930	4200	3550	1820	2060
11	1420	2550	3140	2800	3830	2770	3510	1840	4140	3530	1680	1650
12	1570	2360	3360	2620	4540	3250	3600	2160	3710	3080	1490	1510
13	1550	2560	3140	2340	5180	3030	4110	2780	2450	2580	1720	1480
14	1050	2230	3320	2010	5440	3040	4040	2620	2590	1810	1890	1430
15	805	2000	3120	2220	4120	3460	3850	3200	3310	1980	1780	1460
16	1390	2960	3180	2240	3520	3870	3660	3670	2800	2170	1710	1500
17	1410	2440	2330	2200	3340	3640	3660	3590	3370	2550	2090	1450
18	1330	2150	2740	2140	3370	2960	3560	3550	2860	3230	1640	1040
19	1010	2680	2400	1590	3190	3280	3300	3560	2860	2920	1740	1470
20	1120	2820	2280	1100	3030	3030	3270	3520	2910	2410	1620	1610
21	1440	2320	1660	2460	3000	3070	3140	3770	2890	2550	1900	1570
22	1320	2340	1500	2800	2890	3020	1720	4180	2810	2310	1830	1400
23	1130	2620	1290	2090	2940	2570	1870	4350	2850	2170	1600	854
24	1270	2630	2260	2590	3010	2110	1700	4620	2980	2330	1500	1210
25	1250	2630	2940	3060	3130	2690	2480	4150	2300	2240	1470	1300
26	1400	2630	2920	2860	3560	2770	1740	4290	3330	2100	1500	1070
27	1010	2610	2510	2530	3590	2980	1870	4200	3400	2180	1520	1100
28	1190	3700	3000	1800	3340	4020	2160	3660	3440	2130	1430	1430
29	1290	3450	2690	1910	---	4110	2360	3690	3540	1970	1350	1270
30	1430	5860	2740	1630	---	2560	3660	3050	3070	1920	1490	1100
31	1240	---	2560	1390	---	1190	---	2870	---	2080	1350	---
TOTAL	41106	79990	94290	72250	93791	114980	87850	108670	100130	76670	50627	48364
MEAN	1326	2666	3042	2331	3350	3709	2928	3505	3338	2473	1633	1612
MAX	2060	5860	7360	3060	9100	9020	4110	4800	4560	3650	2100	3520
MIN	805	1050	1290	1100	777	1190	1350	1840	2300	1340	957	854
AC-FT	81530	158700	187000	143300	186000	228100	174300	215500	198600	152100	100400	95930
†	-4,057	-9,856	+6,934	-35,139	+15,882	-809	+9,452	+17,341	-74	+955	+1,612	-1,360
MEAN‡	1,260	2,501	3,153	1,759	3,636	3,696	3,090	3,785	3,337	2,489	1,659	1,590
AC-FT‡	77,470	148,800	193,900	108,200	201,900	227,300	183,800	232,800	198,500	153,100	102,000	94,570

CAL YR 1978: TOTAL 937,637 MEAN 2,569 MAX 7,360 MIN 805 AC-FT 1,860,000
DO......: MEAN‡ 2,577 AC-FT‡ 1,866,000
WTR YR 1979: TOTAL 968,718 MEAN 2,654 MAX 9,100 MIN 777 AC-FT 1,921,000
DO......: MEAN‡ 2,655 AC-FT‡ 1,922,000

† Change in contents, in acre-feet, in Lake Tapps, from information by Puget Sound Power & Light Co.
‡ Adjusted for change in contents in Lake Tapps.

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Water-quality data obtained at Clark Creek bridge 0.8 mi (1.3 km) downstream from gage.

PERIOD OF RECORD.--Water years 1959-68, 1971-72, 1975 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1959 to September 1961, August 1965 to September 1966.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data prior to February 1978 furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT , 1978 26...	0915	1600	108	6.7	9.2	3.8	10.6	79	43	37	2
NOV 27...	1130	2580	75	6.9	4.4	2.0	--	34	55	29	4
DEC 27...	1000	3440	72	6.7	3.4	1.9	12.8	59	17	32	2
JAN , 1979 30...	0900	1950	93	7.0	2.0	4.7	13.0	18	44	30	4
FEB 28...	0930	3270	78	6.9	4.3	4.5	12.3	270	69	28	7
MAR 29...	0945	4110	67	6.1	7.0	2.2	12.1	27	49	26	5
APR 30...	1045	3740	60	6.9	10.0	2.4	11.3	K45	21	21	3
MAY 30...	1000	3100	52	6.5	11.8	3.6	10.5	K27	48	22	6
JUN 28...	1030	3510	50	6.9	15.2	39	10.0	K200	37	19	4
AUG 06...	0945	1590	66	6.3	14.2	38	9.6	K1000	440	22	2
SEP 06...	1100	1850	68	5.9	14.2	22	10.0	54	39	30	9
27...	1100	784	84	7.2	13.0	28	10.1	K19	23	28	7

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT , 1978 26...	10	3.0	5.4	23	.4	1.2	35	12	4.3	.1	17
NOV 27...	8.2	2.0	4.0	23	.3	.9	25	9.2	2.3	.1	17
DEC 27...	8.5	2.5	4.1	21	.3	1.0	30	7.7	3.2	.1	17
JAN , 1979 30...	8.3	2.2	4.3	23	.3	1.0	26	9.0	2.9	.1	18
FEB 28...	7.9	2.0	5.3	28	.4	.8	21	9.0	2.6	.1	16
MAR 29...	7.7	1.7	3.5	22	.3	.6	21	10	3.1	.1	14
APR 30...	5.9	1.4	2.8	22	.3	.6	18	5.3	1.8	.1	13
MAY 30...	6.2	1.5	3.0	22	.3	.8	16	7.5	1.9	.1	11
JUN 28...	5.3	1.3	2.8	24	.3	.8	15	6.2	1.7	.1	15
AUG 06...	6.2	1.6	3.1	29	.3	1.0	20	12	2.0	.1	14
SEP 06...	8.1	2.3	4.7	25	.4	1.0	21	12	3.2	.1	14
27...	7.7	2.2	4.8	34	.4	1.0	21	11	4.8	.1	15

K Results based upon colony counts outside the ideal range.

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER QUALITY DATA

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)
OCT , 1978 26...	85	74	.11	346	21	.15	.10	.27	.37	.04	.33
NOV 27...	65	59	.09	453	7	.24	.05	.19	.24	.00	.39
DEC 27...	71	62	.10	659	13	.54	.03	.25	.28	.00	.34
JAN , 1979 30...	62	62	.08	326	1	.49	.09	.22	.31	.00	.32
FEB 28...	57	56	.08	503	97	.50	.06	.22	.28	.07	.21
MAR 29...	61	53	.08	677	16	.14	.01	.04	.05	.00	.07
APR 30...	48	42	.07	485	44	.10	.04	.11	.15	.00	.16
MAY 30...	47	42	.06	393	14	.06	.06	.15	.21	.00	.21
JUN 28...	44	42	.06	417	56	.05	.04	.36	.40	.21	.19
AUG 06...	54	52	.07	232	100	.06	.03	.09	.12	.00	.16
SEP 06...	63	58	.09	315	63	.18	.11	.40	.51	.23	.28
27...	54	60	.07	114	29	.11	.18	.62	.80	.35	.45

DATE	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1978 26...	.52	2.3	.050	.040	--	3.0	.1	86	372	25
NOV 27...	.48	2.1	.040	--	2.2	--	--	51	355	17
DEC 27...	.82	3.6	.110	.050	2.7	--	--	189	1760	4
JAN , 1979 30...	.80	3.5	.110	.030	--	2.4	.1	28	147	37
FEB 28...	.78	3.5	.070	.060	2.8	--	--	75	662	14
MAR 29...	.19	.84	.010	.020	2.0	--	--	122	1350	11
APR 30...	.25	1.1	.020	.010	--	2.2	.2	19	192	34
MAY 30...	.27	1.2	.030	.030	1.9	--	--	120	1000	8
JUN 28...	.45	2.0	.060	.010	1.1	--	--	75	711	80
AUG 06...	.18	.80	1.50	.030	--	1.9	--	101	434	97
SEP 06...	.69	3.1	.080	.030	3.8	--	--	101	504	89
27...	.91	4.0	.020	.030	1.6	--	--	38	80	99

DATE	TIME	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
AUG , 1979 06...	0945	3.94	4.33	.080	.000	39

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978 26...	0915	1	0	0	0	0	1	0	1	0
JAN , 1979 30...	0900	1	1	0	0	10	1	0	2	10
APR 30...	1045	1	1	0	0	5	0	0	<1	20
AUG 06...	0945	1	1	0	0	5	1	0	2	10

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

WATER QUALITY DATA

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)
OCT , 1978 26...	0	0	2	2	0	8	5	3	770	650
JAN , 1979 30...	0	10	2	0	<3	8	2	6	620	360
APR 30...	10	10	0	0	<3	1	0	1	440	340
AUG 06...	10	0	1	0	<3	10	14	4	1900	1800

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)
OCT , 1978 26...	120	12	9	3	40	0	40	.0	.0	.0
JAN , 1979 30...	260	12	10	2	60	0	60	.0	.0	.0
APR 30...	100	11	10	1	20	10	10	.1	.1	.0
AUG 06...	80	79	79	0	50	30	20	.0	.0	.0

DATE	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT , 1978 26...	0	0	0	0	0	0	10	0	10
JAN , 1979 30...	0	0	0	0	0	0	10	0	10
APR 30...	0	0	0	2	2	0	20	20	<3
AUG 06...	0	0	0	0	0	0	20	10	10

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	NOV 27,78	MAR 29,79	MAY 30,79	JUN 28,79
TIME	1130	0945	1000	1030
TOTAL CELLS/ML	840	830	90	750
DIVERSITY: DIVISION	0.8	0.8	0.0	0.6
.CLASS	0.8	0.8	0.0	0.6
..ORDER	1.0	1.4	1.0	0.6
...FAMILY	1.1	1.6	1.6	0.9
....GENUS	1.2	0.0	1.6	1.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	8	1	--	-	--	-	--	-
...CHLOROCOCCACEAE								
....CHLOROCOCCUM	--	-	--	-	--	-	--	-
...MICRACTINIACEAE								
....MICRACTINIUM	--	-	120	14	--	-	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	23	3	14	2	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-
....TREUBARIA	8	1	--	-	--	-	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	--	-	--	-
..TETRASPORALES								
...COCCOMYXACEAE								
....ELAKATOTHRIX	23	3	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE	--	-	58	7	--	-	--	-
....CHLAMYDOMONAS	--	-	--	-	--	-	13	2
...VOLVOCACEAE								
....PANDORINA	--	-	--	-	--	-	620#	83
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	8	1	580#	69	39#	43	--	-
....MELOSIRA	--	-	--	-	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	15	2	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	8	1	--	-	--	-	--	-
...CYMBELLACEAE								
....CYMBELLA	--	-	--	-	26#	29	--	-
...DIATOMACEAE								
....DIATOMA	--	-	--	-	--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	--	-	29	3	--	-	64	9
....FRAGILARIA	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	26	3
...GOMPHONEMATACEAE								
....GOMPHONEMA	--	-	--	-	--	-	--	-
...NAVICULACEAE								
....NAVICULA	23	3	29	3	26#	29	13	2
...NITZSCHIACEAE								
....NITZSCHIA	31	4	14	2	--	-	13	2
...SURIRELLACEAE								
....SURIRELLA	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	700#	83	--	-	--	-	--	-
....SCHIZOTHRIX	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
.EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....EUGLENA	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

12101500 PUYALLUP RIVER AT PUYALLUP, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	AUG 6,79	SEP 6,79	SEP 27,79
TIME	0945	1200	1100
TOTAL CELLS/ML	1300	1100	700
DIVERSITY: DIVISION	0.5	1.2	1.4
.CLASS	0.5	1.2	1.4
..ORDER	0.5	1.3	1.5
...FAMILY	0.5	1.8	2.8
....GENUS	0.5	1.8	3.2

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...CHARACIACEAE						
....SCHROEDERIA	--	-	--	-	--	-
...CHLOROCOCCACEAE						
....CHLOROCOCCUM	--	-	--	-	5	1
...MICRACTINIACEAE						
....MICHACTINIUM	--	-	--	-	--	-
...OOCYSTACEAE						
....ANKISTRODESMUS	--	-	10	1	15	2
....CHLORELLA	--	-	40	4	--	-
....SELENASTRUM	--	-	--	-	20	3
....TREUBARIA	--	-	--	-	--	-
...SCENEDESMACEAE						
....ACTINASTRUM	110	9	--	-	20	3
....SCENEDESMUS	--	-	60	6	--	-
..TETRASPORALES						
...COCCOMYXACEAE						
....ELAKATOTHRIX	--	-	--	-	--	-
..VOLVOCALES						
...CHLAMYDOMONADACEAE	--	-	--	-	--	-
....CHLAMYDOMONAS	--	-	--	-	--	-
...VOLVOCACEAE						
....PANDORINA	--	-	--	-	--	-
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	--	-	30	3	15	2
....MELOSIRA	--	-	--	-	5	1
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	--	-	--	-	10	1
....COCCONEIS	--	-	--	-	5	1
....RHOICOSPHENIA	--	-	30	3	10	1
...CYMBELLACEAE						
....CYMBELLA	--	-	*	0	15	2
...DIATOMACEAE						
....DIATOMA	--	-	15	1	10	1
...FRAGILARIACEAE						
....ASTERIONELLA	--	-	--	-	20	3
....FRAGILARIA	--	-	--	-	110#	16
....SYNEDRA	--	-	55	5	15	2
...GOMPHONEMATACEAE						
....GOMPHONEMA	--	-	--	-	25	4
...NAVICULACEAE						
....NAVICULA	--	-	25	2	61	9
...NITZSCHIACEAE						
....NITZSCHIA	14	1	50	5	66	9
...SURIRELLACEAE						
....SURIRELLA	--	-	--	-	5	1
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..HORMOGONALES						
...OSCILLATORIACEAE						
....OSCILLATORIA	1200#	90	--	-	--	-
....SCHIZOTHRIX	--	-	760#	70	260#	37
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	--	-	5	1

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

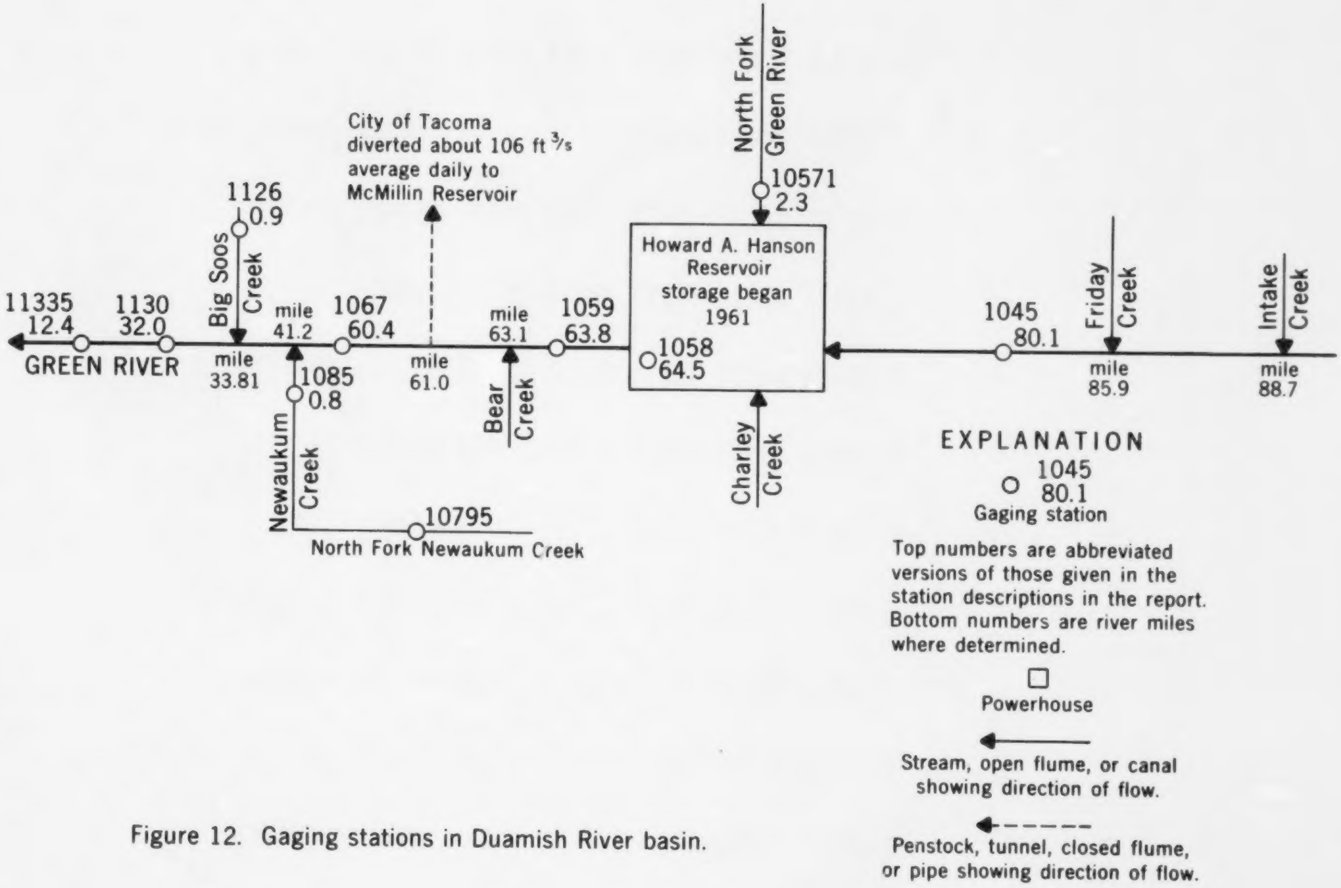
11335
12.4
1130
32.0
GREEN RIVER
1126
0.9
Big Soos Creek
mile 33.81
mile 41.2
1085
0.8
Newaukum Creek
10795
North Fork Newaukum Creek
1067
60.4
City of Tacoma diverted about 106 ft³/s average daily to McMillin Reservoir
mile 61.0
mile 63.1
Bear Creek
1059
63.8
Howard A. Hanson Reservoir storage began 1961
1058
64.5
North Fork Green River
10571
2.3
Charley Creek
1045
80.1
Friday Creek
mile 85.9
Intake Creek
mile 88.7
EXPLANATION
1045
80.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 12. Gaging stations in Duamish River basin.

12104500 GREEN RIVER NEAR LESTER, WA

LOCATION.--Lat 47°12'28", long 121°33'07", in NE¼SE¼ sec.20, T.20 N., R.10 E., King County, Hydrologic Unit 17110013, on left bank 0.4 mi (0.6 km) upstream from Champion Creek, 1.2 mi (1.9 km) downstream from McCain Creek, 2.9 mi (4.7 km) west of Lester, and at mile 80.1 (128.9 km).

DRAINAGE AREA.--96.2 mi² (249.2 km²).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1947(M). WSP 1316: 1948(M). WSP 1932: 1960, drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,480 ft (451 m), from river-profile map. Prior to Nov. 22, 1959, water-stage recorder at site 300 ft (91 m) upstream at different datum (gage destroyed by flood of Nov. 22, 1959); Dec. 28, 1959, to Sept. 21, 1960, nonrecording gage at site 400 ft (122 m) downstream at different datum.

REMARKS.--Records good. No regulation or diversion above station. No gage-height record Sept. 13-30.

AVERAGE DISCHARGE.--34 years, 401 ft³/s (11.36 m³/s) 56.61 in/yr (1,438 mm/yr), 290,500 acre-ft/yr (358 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 22,000 ft³/s (623 m³/s) Nov. 22, 1959, gage height, 12.41 ft (3.783 m), from floodmarks, present site and datum, on basis of slope-area measurement of peak flow; minimum, 22 ft³/s (0.62 m³/s) Nov. 20, 1952, Sept. 27, 1967, part or all of each day Oct. 18-20, 23-27, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	0400	*1,290	36.5	*3.85	1.173

Minimum daily discharge, 32 ft³/s (0.906 m³/s) Sept. 28-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	56	627	200	113	240	266	784	282	127	50	45
2	95	54	500	180	111	229	259	724	306	124	49	54
3	89	91	510	170	109	219	247	700	330	104	49	62
4	85	294	931	160	116	314	429	748	330	98	49	53
5	80	247	691	155	226	637	585	748	318	95	48	48
6	77	202	550	148	388	1200	570	706	302	91	47	44
7	75	190	457	142	900	1230	520	628	262	88	45	42
8	73	495	397	138	540	894	481	550	234	84	45	43
9	72	406	361	133	515	691	461	510	210	83	44	48
10	70	327	322	140	585	585	434	475	201	91	44	49
11	68	270	340	145	550	545	420	460	201	84	43	44
12	65	236	310	139	601	555	406	475	198	86	43	42
13	64	212	286	134	659	550	443	505	195	80	42	39
14	61	190	365	129	550	525	457	560	177	76	43	39
15	58	175	383	124	457	535	420	598	162	73	42	39
16	57	187	340	119	388	535	388	622	153	71	42	39
17	57	327	306	117	340	490	397	580	147	69	47	37
18	56	322	278	112	310	452	374	555	140	67	45	37
19	54	282	247	112	282	424	348	525	137	65	45	37
20	54	244	233	129	259	429	327	500	132	63	45	37
21	54	226	229	219	236	434	327	515	124	62	45	35
22	52	206	255	187	222	438	357	535	120	61	49	35
23	51	190	286	166	212	447	415	560	115	60	44	35
24	68	178	565	158	206	481	461	525	111	58	42	33
25	60	166	500	147	222	495	525	490	109	58	40	33
26	54	155	415	139	274	452	590	480	106	57	45	33
27	52	155	365	134	286	410	719	455	102	56	61	33
28	52	361	314	129	262	374	810	395	100	54	47	32
29	60	374	260	123	---	340	828	326	98	53	42	32
30	61	632	240	120	---	310	790	290	104	52	43	32
31	58	---	220	116	---	282	---	274	---	50	45	---
TOTAL	2033	7450	12083	4464	9919	15742	14054	16798	5506	2340	1410	1211
MEAN	65.6	248	390	144	354	508	468	542	184	75.5	45.5	40.4
MAX	101	632	931	219	900	1230	828	784	330	127	61	62
MIN	51	54	220	112	109	219	247	274	98	50	40	32
CFSM	.68	2.58	4.05	1.50	3.68	5.28	4.87	5.63	1.91	.79	.47	.42
IN.	.79	2.88	4.67	1.73	3.84	6.09	5.43	6.50	2.13	.90	.55	.47
AC-FT	4030	14780	23970	8850	19670	31220	27880	33320	10920	4640	2800	2400

CAL YR 1978 TOTAL 82179 MEAN 225 MAX 931 MIN 51 CFSM 2.34 IN 31.78 AC-FT 163000
WTR YR 1979 TOTAL 93010 MEAN 255 MAX 1230 MIN 32 CFSM 2.65 IN 35.97 AC-FT 184500

12105710 NORTH FORK GREEN RIVER NEAR LEMOLO, WA

LOCATION.--Lat 47°18'21", long 121°46'20", near line between SW¼ and SE¼ sec.15, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on left bank 1.8 mi (2.9 km) northeast of Lemolo siding, 5.5 mi (8.8 km) east of Palmer, and at mile 2.3 (3.7 km).

DRAINAGE AREA.--16.7 mi^2 (43.3 km^2).

PERIOD OF RECORD.--June 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,250 ft (381 m), from topographic map.

REMARKS.--Records good. No regulation or diversion. Considerable water goes underground a short distance above the gage and, at times during dry summers, the streambed at the gage may become completely dry.

AVERAGE DISCHARGE.--14 years, 87.3 ft^3/s (2.472 m^3/s) 70.99 in/yr (1,803 mm/yr) 63,250 acre-ft/yr (78.0 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,010 ft^3/s (56.9 m^3/s) Dec. 2, 1975, gage height, 8.29 ft (2.527 m); no flow Aug. 8, 9, 18, Sept. 5-13, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 28, 1965 reached a stage of 9.50 ft (2.896 m) from floodmarks, discharge, 2,370 ft^3/s (67.1 m^3/s) by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft^3/s (14.2 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Feb. 6	2000	*605	17.1	*5.87	1.789

Minimum discharge, 5.5 ft^3/s (0.16 m^3/s) Aug. 30, gage height, 3.85 ft (1.173 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	17	255	58	42	69	50	131	30	30	8.4	8.8
2	45	17	171	51	41	60	50	116	28	31	8.4	20
3	40	58	195	46	40	53	48	107	26	25	8.4	25
4	35	191	344	43	47	116	157	119	25	23	8.1	22
5	33	97	231	41	122	275	199	125	28	20	7.8	14
6	27	71	157	38	275	416	154	119	31	18	7.8	12
7	24	73	131	36	367	398	125	107	25	17	7.4	10
8	22	287	102	34	199	263	107	90	22	17	7.0	8.8
9	21	150	92	32	170	195	110	85	21	16	7.0	18
10	21	105	92	34	230	157	102	77	19	24	6.7	21
11	21	81	187	36	210	137	100	75	17	19	6.7	17
12	20	65	143	35	270	134	100	77	16	23	6.7	12
13	18	56	113	34	300	128	131	81	16	19	6.4	11
14	17	53	161	33	199	122	134	87	16	17	6.4	8.8
15	16	48	128	33	143	131	119	85	14	17	6.4	8.8
16	15	71	113	32	110	134	100	95	14	16	7.4	8.8
17	14	215	92	32	90	116	95	81	14	13	8.5	8.1
18	14	150	83	31	81	102	85	77	14	12	8.1	7.8
19	13	110	73	33	71	92	77	67	17	12	7.8	6.7
20	16	87	67	63	62	90	73	65	17	11	7.8	6.7
21	17	75	63	143	55	90	69	65	14	11	7.4	6.7
22	13	65	90	87	48	87	75	63	12	11	8.5	6.7
23	13	56	102	75	45	87	83	60	12	11	7.8	6.7
24	47	53	295	67	55	90	90	53	11	11	7.4	6.7
25	21	48	183	62	85	87	95	48	10	10	6.4	6.7
26	17	44	147	55	107	81	110	45	9.5	10	6.0	6.7
27	16	48	116	53	102	75	134	42	9.2	9.5	5.8	6.7
28	16	116	92	50	83	69	147	41	8.8	9.5	5.8	7.1
29	21	92	85	47	---	63	137	37	8.5	9.5	5.8	7.1
30	21	255	75	45	---	60	128	33	12	9.2	5.5	7.1
31	18	---	65	43	---	55	---	30	---	8.4	7.8	---
TOTAL	703	2854	4243	1502	3649	4032	3184	2383	517.0	490.1	223.4	323.5
MEAN	22.7	95.1	137	48.5	130	130	106	76.9	17.2	15.8	7.21	10.8
MAX	51	287	344	143	367	416	199	131	31	31	8.5	25
MIN	13	17	63	31	40	53	48	30	8.5	8.4	5.5	6.7
CFSM	1.36	5.70	8.20	2.90	7.78	7.78	6.35	4.61	1.03	.95	.43	.65
IN.	1.57	6.36	9.45	3.35	8.13	8.98	7.09	5.31	1.15	1.09	.50	.72
AC-FT	1390	5660	8420	2980	7240	8000	6320	4730	1030	972	443	642

CAL YR 1978 TOTAL 20922.2 MEAN 57.3 MAX 344 MIN 4.3 CFSM 3.43 IN 46.60 AC-FT 41500
WTR YR 1979 TOTAL 24104.0 MEAN 66.0 MAX 416 MIN 5.5 CFSM 3.95 IN 53.69 AC-FT 47810

12105800 HOWARD A. HANSON RESERVOIR NEAR PALMER, WA

LOCATION.--Lat 47°16'38", long 121°47'03", in NE¼SE¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, near left bank on outlet gate structure just upstream from Howard A. Hanson Dam on Green River, 1.4 mi (2.3 km) upstream from Bear Creek , 5.1 mi (8.2 km) southeast of Palmer, and at mile 64.5 (103.8 km).

DRAINAGE AREA.--220 mi² (570 km²) approximately.

PERIOD OF RECORD.--December 1961 to current year.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929. Supplementary long-distance water-stage recorder on right bank at same datum.

REMARKS.--Reservoir is formed by earth-fill dam; completed Mar. 31, 1962; storage began Dec. 5, 1961. Capacity 105,650 acre-ft (310 hm³) between elevations 1,035 ft (315.5 m), invert of outlet tunnel, and 1,206 ft (367.6 m), top of spillway gates. Storage is not retained but is dissipated as soon after a flood as is possible without creating damaging flows downstream in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Record of reservoir elevations and capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 61,325 acre-ft (75.6 hm³) Dec. 5, 1975, elevation, 1,175.8 ft (358.38 m); minimum observed, 34 acre-ft (41,900 hm³) Nov. 2, 1962, elevation, 1,037.6 ft (316.26 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 19,906 acre-ft (24.5 hm³) July 5-16, elevation, 1,132.60 ft (345.22 m); minimum observed, 522 acre-ft (0.644 hm³) Dec. 18, elevation, 1,055.6 (321.75 m).

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on photogrametric maps by Fairchild Aerial Surveys in 1961)

1,045	153	1,080	2,800	1,140	24,887
1,050	289	1,090	4,554	1,150	33,301
1,055	493	1,100	6,893	1,160	43,092
1,060	770	1,110	9,715	1,170	54,326
1,065	1,132	1,120	13,386	1,180	66,591
1,070	1,588	1,130	18,362		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
INSTANTANEOUS OBSERVATIONS AT 0900

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11737	6493	1021	1413	990	975	1199	1294	8401	19002	18306	13473
2	11295	6320	684	1358	883	1216	1132	1092	8895	19539	18193	13386
3	11080	6198	953	1376	1059	1251	1108	835	9530	19723	18025	13429
4	11044	6053	2758	1303	1251	1403	1216	1199	10261	19845	17912	13429
5	10974	6419	1660	1216	1734	3098	1755	1339	11009	19906	17691	13386
6	10905	6125	627	1330	1558	3052	1059	1339	11774	19906	17583	13259
7	10662	5165	616	1451	5098	3272	1268	1124	12476	19906	17420	13175
8	10359	5210	783	1489	1539	2095	1268	1036	13048	19906	17257	13006
9	10097	4051	1021	1413	1051	632	1157	776	13604	19906	17098	12882
10	9778	3037	1051	1199	1005	1619	1036	842	14091	19906	16887	12800
11	9653	2036	1216	1036	849	1558	896	849	14549	19906	16728	12719
12	9468	1451	649	925	896	1358	1021	1021	15022	19906	16573	12596
13	9315	975	770	855	1191	1216	1182	1166	15461	19906	16366	12476
14	9224	855	917	727	783	1043	1182	1451	15858	19906	16211	12317
15	9133	770	578	584	667	932	1083	1394	16211	19906	16060	12158
16	8984	828	835	783	1067	1036	842	1268	16521	19906	15909	12004
17	8865	1598	739	917	1529	953	1005	1174	16834	19845	15757	11851
18	8690	2444	522	998	1588	696	1021	822	17045	19784	15608	11663
19	8515	2632	770	1043	1479	714	910	896	17311	19723	15510	11514
20	8373	2431	764	903	1260	1005	1043	758	17583	19661	15313	11295
21	8258	1798	869	1470	1100	1132	1358	1568	17800	19661	15166	11080
22	8146	1182	990	1898	946	1191	1578	2564	17969	19600	15022	10835
23	7979	917	883	1394	1132	1216	1787	3697	18137	19420	14927	10629
24	7979	684	1842	953	1286	1268	1349	4767	18250	19300	14735	10359
25	7678	815	3626	953	1640	1413	990	5485	18362	19181	14596	10130
26	7438	835	4031	896	1989	1460	1149	6247	18478	19061	14410	9905
27	7359	783	2873	1028	1734	1403	1598	7149	18594	18942	14226	9684
28	7149	1349	1702	1132	1385	1367	1442	7411	18420	18826	14091	9468
29	6995	961	983	1182	---	1321	1529	7651	18710	18710	13911	9285
30	6893	1385	1303	1149	---	1321	1558	7842	18768	18594	13777	9044
31	6692	---	1451	1083	---	1303	---	8118	---	18478	13604	---
MAX	11737	6493	4031	1898	5098	3272	1787	8118	18768	19906	18306	13473
MIN	6692	684	522	584	667	632	842	758	8401	18478	13604	9044
††	1,098.7	1,065.2	1,068.4	1,063.6	1,064.8	1,066.2	1,068.0	1,105.2	1,131.0	1,130.0	1,120.3	1,107.4
†	6,568	1,149	1,432	1,021	1,116	1,233	1,394	8,287	18,942	18,362	13,516	8,925
‡	-5,321	-5,419	+283	-411	+95	+117	+161	+6,893	+10,655	-580	-4,846	-4,591

CAL YR 1978..................................‡ +275
WTR YR 1979..................................‡ -2,964

†† Monthend estimated elevation, in feet, at 2400 hours.
† Monthend estimated contents, in acre-feet.
‡ Change in contents, in acre-feet.
NOTE.--Daily contents, in acre-feet, usually at 0900 hours.

12105900 GREEN RIVER BELOW HOWARD A. HANSON DAM, WA

LOCATION.--Lat 47°17'02", long 121°47'48", in NE¼NW¼ sec.28, T.21 N., R.8 E., King County, Hydrologic Unit 17110013, on right bank 0.7 mi (1.1 km) upstream from Bear Creek, 0.7 mi (1.1 km) downstream from Howard A. Hanson Dam, 5.0 mi (8.0 km) southeast of Palmer, and at mile 63.8 (102.7 km).

DRAINAGE AREA.--221 mi^2 (572 km^2).

PERIOD OF RECORD.--October 1960 (monthly discharge only), November 1960 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 990 ft (302 m), from topographic map.

REMARKS.--Records good. Flow regulated by Howard A. Hanson Reservoir (see sta 12105800) for flood control and during summer months to augment the natural river flow. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--19 years, 1,055 ft^3/s (29.88 m^3/s) 64.83 in/yr (1,647 mm/yr) 764,300 acre-f/yr (942 hm^3/yr) adjusted for storage in Howard A. Hanson Reservoir since December 1961.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft^3/s (346 m^3/s) Feb. 21, 1961, gage height, 14.40 ft (4.389 m); minimum, 87 ft^3/s (2.46 m^3/s) Dec. 29, 1961, gage height, 3.49 ft (1.064 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,970 ft^3/s (169 m^3/s) Feb. 7, gage height, 11.30 ft (3.444 m); minimum, 220 ft^3/s (6.23 m^3/s) June 1, gage height, 4.15 ft (1.265 m); minimum daily discharge, 222 ft^3/s (6.29 m^3/s) Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	641	341	3050	570	373	955	840	2230	390	233	238	229
2	549	361	1970	590	309	805	805	2100	325	233	238	229
3	405	633	1670	605	270	810	771	1810	330	233	238	229
4	358	945	2960	601	270	885	1110	1910	325	233	238	229
5	355	950	3190	514	758	2690	2020	2050	322	233	238	229
6	402	1060	1920	399	1780	4870	1790	2030	309	233	238	229
7	434	1280	1340	405	4630	5450	1450	1790	280	233	236	226
8	434	2000	1040	465	3260	4360	1440	1630	255	233	236	226
9	430	2130	1000	518	2310	2330	1420	1380	238	233	236	226
10	390	1530	1000	514	2610	1910	1360	1270	241	238	236	226
11	350	1290	1390	493	2500	1880	1290	1170	241	238	236	226
12	347	980	1260	476	2710	1820	1260	1190	243	238	236	226
13	314	805	1020	465	3040	1770	1440	1230	243	238	236	224
14	290	597	1390	441	2400	1700	1600	1480	233	238	233	224
15	288	545	1370	339	1650	1650	1510	1650	229	241	233	224
16	288	521	1190	283	1230	1700	1260	1700	231	241	233	224
17	288	800	1140	293	1140	1640	1170	1700	231	241	233	224
18	288	1050	880	298	1150	1400	1190	1460	231	238	233	222
19	285	1070	805	361	1110	1190	1040	1380	231	238	233	238
20	285	1130	758	448	1030	1170	870	995	231	238	233	245
21	285	1120	703	545	915	1210	830	771	233	238	233	243
22	283	905	870	805	766	1220	885	748	233	238	233	238
23	283	758	965	800	641	1230	1230	753	233	238	233	236
24	375	597	1190	605	663	1250	1460	790	233	238	233	231
25	405	518	1380	504	758	1270	1380	748	233	238	231	231
26	317	518	1740	444	1170	1240	1430	730	233	238	231	231
27	309	490	1840	378	1350	1170	1900	748	233	238	231	229
28	330	940	1490	384	1280	1050	2200	758	233	238	231	229
29	328	1370	905	387	---	980	2220	690	233	238	231	226
30	350	2620	565	384	---	905	2280	573	233	238	231	226
31	367	---	560	365	---	890	---	476	---	238	229	---
TOTAL	11053	29854	42551	14679	42073	53400	41451	39940	7689	7342	7258	6875
MEAN	357	995	1373	474	1503	1723	1382	1288	256	237	234	229
MAX	641	2620	3190	805	4630	5450	2280	2230	390	241	238	245
MIN	283	341	560	283	270	805	771	476	229	233	229	222
AC-FT	21920	59220	84400	29120	83450	105900	82220	79220	15250	14560	14400	13640
†	-5,321	-5,419	+283	-411	+95	+117	+161	+6,893	+10,655	-580	-4,846	-4,591
MEAN‡	270	904	1,377	467	1,505	1,724	1,385	1,400	435	227	155	152
CFSM‡	1.22	4.09	6.23	2.11	6.81	7.80	6.27	6.33	1.97	1.03	0.70	0.69
IN.‡	1.41	4.56	7.18	2.44	7.09	8.99	6.99	7.31	2.20	1.19	0.81	0.77
AC-FT‡	16,599	53,801	84,683	28,709	83,545	106,017	82,381	86,113	25,905	13,980	9,554	9,049

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CAL YR 1978:  TOTAL  248,093   MEAN  680    MAX  3,190   MIN  219   AC-FT 492,100
   DO.....:   MEAN‡      680   CFSM‡3.08    IN.‡ 41.77   AC-FT‡  492,375
WTR YR 1979:  TOTAL  304,165   MEAN  833    MAX  5,450   MIN  222   AC-FT 603,300
   DO.....:   MEAN‡      829   CFSM‡3.75    IN.‡ 50.93   AC-FT‡  600,336
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† Change in contents, in acre-feet, in Howard A. Hanson Reservoir.
‡ Adjusted for change in contents, in Howard A. Hanson Reservoir.

12106700 GREEN RIVER AT PURIFICATION PLANT, NEAR PALMER, WA

LOCATION.--Lat 47°18'19", long 121°50'58", in NE¼SE¼ sec.13, T.21 N., R.7 E., King County, Hydrologic Unit 17110013, on left bank at city of Tacoma purification plant, 0.6 mi (1.0 km), downstream from diversion dam, 2 mi (3.2 km) southeast of Palmer, and at mile 60.4 (97.2 km).

DRAINAGE AREA.--231 mi^2 (598 km^2).

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 859.53 ft (261.985 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (see sta 12105800), 4.1 mi (6.6 km) upstream for flood control and during summer months to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 106 ft^3/s (3.00 m^3/s) above station for municipal supply. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--16 years, 1,035 ft^3/s (29.31 m^3/s), 749,900 acre-ft/yr (925 hm^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,700 ft^3/s (331 m^3/s) Dec. 3, 1977, gage height, 11.85 ft (3.612 m); minimum, 20 ft^3/s (0.566 m^3/s), part or all of each day Oct. 26, 27, Nov. 3, 6, 1974, gage height, 3.90 ft (1.216 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, had a discharge of 27,800 ft^3/s (787 m^3/s), by slope-area measurement at site 0.6 mi (1.0 km) downstream from gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,420 ft^3/s (182 m^3/s) Feb. 7, gage height, 10.25 ft (3.124 m); minimum, 88 ft^3/s (2.49 m^3/s) July 12, gage height, 4.99 ft (1.521 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	549	239	3410	464	266	878	752	2080	310	152	104	104
2	458	257	1980	494	218	738	738	1950	226	197	104	110
3	315	542	1590	528	193	745	703	1650	226	218	104	113
4	257	906	3050	535	201	850	968	1730	226	210	104	110
5	257	885	3260	440	731	2710	1900	1900	226	210	104	104
6	295	960	1840	320	1920	5110	1690	1880	210	205	104	104
7	330	1170	1260	330	4980	5850	1320	1630	185	205	104	104
8	325	1940	984	386	3190	4560	1300	1450	163	205	104	107
9	325	2200	936	440	2370	2360	1280	1260	145	205	104	107
10	280	1500	928	422	2670	1810	1250	1140	145	201	104	107
11	248	1250	1370	404	2590	1760	1170	1050	145	201	104	104
12	248	923	1200	386	2820	1700	1160	1050	142	173	104	104
13	218	739	960	374	3220	1640	1390	1090	149	120	104	104
14	193	517	1340	352	2470	1570	1490	1300	142	126	104	104
15	193	462	1280	262	1630	1530	1380	1450	136	126	104	104
16	189	452	1110	201	1200	1570	1180	1500	136	126	107	107
17	189	829	1060	210	1080	1500	1090	1510	136	119	107	99
18	189	1020	822	214	1100	1300	1080	1300	136	119	107	99
19	182	1000	738	262	1060	1090	960	1220	136	119	107	107
20	189	1070	889	392	976	1060	794	892	136	119	107	122
21	185	1060	633	640	857	1090	752	675	136	116	107	122
22	185	815	843	773	710	1100	801	654	136	113	104	122
23	185	682	920	752	570	1110	1090	654	136	113	104	119
24	275	514	1220	542	591	1120	1300	689	136	113	104	119
25	305	434	1320	428	703	1140	1240	654	136	113	104	116
26	222	434	1610	369	1130	1140	1280	640	136	116	104	113
27	205	416	1640	295	1300	1030	1730	661	139	113	102	113
28	226	871	1260	295	1200	944	2050	668	136	113	102	116
29	230	1270	703	300	---	878	2070	605	129	113	102	110
30	248	2820	452	290	---	794	2160	488	132	113	102	110
31	262	---	452	262	---	773	---	404	---	110	102	---
TOTAL	7957	28177	40860	12362	41946	51450	38068	35824	4808	4602	3232	3284
MEAN	257	939	1318	399	1498	1660	1269	1156	160	148	104	109
MAX	549	2820	3410	773	4980	5850	2160	2080	310	218	107	122
MIN	182	239	452	201	193	738	703	404	129	110	102	99
AC-FT	15780	55890	81050	24520	83200	102100	75510	71060	9540	9130	6410	6510

CAL YR 1978 TOTAL 218846 MEAN 600 MAX 3410 MIN 104 AC-FT 434100
WTR YR 1979 TOTAL 272570 MEAN 747 MAX 5850 MIN 99 AC-FT 540600

12107000 GREEN RIVER AT KANASKAT, WA

LOCATION.--Lat 47°19'10", long 121°53'33", in NE¼SE¼ sec.10, T.21 N., R.7 E., King County, Hydrologic Unit 17110013, at county bridge at Kanasket, 4.5 mi (7.2 km) downstream from gaging station (12106700) and 7 mi (11 km) downstream from North Fork.

DRAINAGE AREA.--240 mi^2 (622 km^2).

PERIOD OF RECORD.--Water years 1950-57, 1959, 1976 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: August 1950 to September 1957.
SUSPENDED SEDIMENT: October 1952 to September 1957.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good. Records prior to 1975 published as 12106500 "Green River near Palmer."

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
23...	1000	174	65	7.6	9.8	5	1.0
NOV							
13...	1020	E740	60	7.3	3.0	10	4.0
DEC							
18...	1115	885	45	7.2	3.4	20	--
JAN , 1979							
09...	1010	428	50	7.4	1.3	10	3.0
FEB							
06...	1110	1000	45	7.3	3.2	15	19
MAR							
05...	1035	1410	40	7.3	5.7	35	11
APR							
09...	1000	1320	41	7.3	5.4	15	1.0
MAY							
14...	1020	1460	43	7.1	10.5	20	3.0
JUN							
25...	1000	159	54	7.5	12.4	15	1.0
JUL							
16...	1000	126	57	7.2	14.1	15	1.0
AUG							
27...	0945	104	64	7.4	15.8	15	2.0
SEP							
24...	1035	119	66	7.5	14.6	20	1.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
23...	11.2	.07	.01	.010	.01	.03
NOV						
13...	13.9	.20	.01	.020	.01	.03
DEC						
18...	12.9	.26	.01	.050	.04	.12
JAN , 1979						
09...	14.4	.30	.01	.010	.00	.00
FEB						
06...	13.5	.25	.01	.010	.00	.00
MAR						
05...	13.0	.31	.01	.030	.01	.03
APR						
09...	12.7	.11	.01	.010	.02	.06
MAY						
14...	11.4	.05	.03	.020	.00	.00
JUN						
25...	10.6	.09	.01	.010	.03	.09
JUL						
16...	10.6	.08	.02	.000	.01	.03
AUG						
27...	9.7	.03	.13	.030	.04	.12
SEP						
24...	10.3	.06	.13	.000	.00	.00

12107950 NORTH FORK NEWAUKUM CREEK NEAR ENUMCLAW, WA

LOCATION.--Lat 47°14'06", long 121°55'42", in NW¼SW¼ sec.9, T.20 N., R.7 E., King County, Hydrologic Unit 17110010, on right bank 2.9 mi (4.7 km) northeast of Enumclaw.

DRAINAGE AREA.--1.93 mi^2 (5.0 km^2).

PERIOD OF RECORD.--July 1977 to July 1978 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 930 ft (283 m) from topographic map.

REMARKS.--Records good except those for discharges less than 1.0 ft^3/s (0.028 m^3/s), which are fair. No known regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34 ft^3/s (0.96 m^3/s) Aug. 26, 1977, gage height, 8.74 ft (2.664 m) from rating extended above 18 ft^3/s (0.51 m^3/s); minimum, 0.02 ft^3/s (0.001 m^3/s) Aug. 17, 18, 1977, gage height, 7.71 ft (2.350 m).

EXTREMES FOR CURRENT PERIOD.--October 1977 to July 1978: Maximum discharge during period, 32 ft^3/s (0.91 m^3/s) Dec. 2, gage height, 8.72 ft (2.658 m) from rating curve extended above 18 ft^3/s (0.51 m^3/s); minimum, 0.68 ft^3/s (0.019 m^3/s) July 25, 26, 29, 30, 31, gage height, 7.87 ft (2.399 m).

CORRECTIONS.--Daily discharge for period January 12 to February 14 for water year 1978 has been corrected in this publication. These figures supersede those published in the report for 1978.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO JULY 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	5.8	10	3.3	4.1	3.9	3.3	5.4	2.0	1.3		
2	2.7	8.0	25	3.4	4.7	3.5	3.0	4.3	1.9	1.2		
3	2.4	5.2	21	4.0	5.1	3.4	2.8	4.3	1.8	1.3		
4	2.1	4.2	16	4.4	4.7	3.4	4.6	4.1	1.6	1.2		
5	2.0	3.6	14	4.6	4.5	3.1	4.7	3.9	1.5	1.2		
6	2.1	3.0	15	4.6	4.7	2.9	4.1	3.5	1.4	1.0		
7	2.2	2.8	14	5.2	4.3	3.3	3.6	3.1	1.3	1.0		
8	1.9	2.5	12	7.9	3.8	3.1	3.2	3.0	1.3	1.0		
9	1.8	2.5	11	6.8	4.1	2.9	3.0	2.8	2.5	.99		
10	1.6	4.0	13	5.3	3.9	2.8	2.7	3.0	2.8	1.0		
11	1.5	3.8	18	4.7	3.5	2.9	2.5	3.9	2.6	1.0		
12	1.4	3.4	16	4.3	3.3	3.2	2.3	4.1	2.4	.95		
13	1.6	3.6	18	3.9	3.1	3.4	2.2	4.5	2.7	.91		
14	1.3	4.0	19	3.9	2.8	3.3	2.2	4.7	2.6	.85		
15	1.2	3.8	17	3.7	3.4	3.1	2.4	4.9	3.7	.82		
16	1.5	4.6	15	3.3	3.1	3.0	11	4.7	3.7	1.5		
17	1.3	4.2	12	3.1	3.0	2.8	10	4.2	3.2	1.3		
18	1.3	4.0	9.9	3.0	3.1	2.7	9.2	3.8	2.8	1.1		
19	1.2	3.8	8.2	3.0	3.2	2.5	11	3.4	2.5	1.0		
20	1.2	3.4	7.2	3.0	3.1	2.4	9.5	3.1	2.2	.95		
21	1.1	3.0	6.3	5.1	2.9	2.3	8.3	2.9	2.1	.86		
22	1.1	3.0	5.6	4.5	2.8	2.1	10	2.7	1.9	.81		
23	1.2	3.4	4.9	4.1	3.1	2.3	11	2.6	1.7	.74		
24	1.5	4.0	4.6	3.7	3.0	2.3	8.7	2.4	1.6	.72		
25	3.2	13	4.2	3.7	4.0	2.5	7.2	2.2	1.6	.69		
26	3.4	12	4.0	4.3	4.8	2.5	6.9	2.2	1.6	.82		
27	2.6	11	3.7	4.3	4.3	2.3	9.6	2.7	1.5	.93		
28	2.2	14	3.5	4.1	4.1	2.8	8.6	2.8	1.4	.76		
29	2.1	15	3.6	4.1	---	2.7	8.0	2.7	1.4	.71		
30	3.4	10	4.2	3.7	---	3.6	7.4	2.4	1.5	.68		
31	3.4	---	3.6	3.7	---	3.6	---	2.2	---	.68		
TOTAL	60.5	168.6	339.5	130.7	104.5	90.6	183.0	106.5	62.8	29.97		
MEAN	1.95	5.62	11.0	4.22	3.73	2.92	6.10	3.44	2.09	.97		
MAX	3.4	15	25	7.9	5.1	3.9	11	5.4	3.7	1.5		
MIN	1.1	2.5	3.5	3.0	2.8	2.1	2.2	2.2	1.3	.68		
CFSM	1.01	2.91	5.70	2.19	1.93	1.51	3.16	1.78	1.08	.50		
IN.	1.17	3.25	6.54	2.52	2.01	1.75	3.53	2.05	1.21	.58		
AC-FT	120	334	673	259	207	180	363	211	125	59		

12108500 NEWAUKUM CREEK NEAR BLACK DIAMOND, WA

LOCATION.--Lat 47°16'33", long 122°03'30", in NW¼SW¼ sec.28, T.21 N., R.6 E., King County, Hydrologic Unit 17110013, on right bank 0.1 mi (0.2 km) downstream from West Whitney Hill bridge, 0.8 mi (1.3 km) upstream from mouth, and 3.5 mi (5.6 km) southwest of Black Diamond.

DRAINAGE AREA.--27.4 mi^2 (71.0 km^2).

PERIOD OF RECORD.--July 1944 to November 1950, water year 1951-52 (annual maximum), September 1952 to current year.

REVISED RECORDS.--WSP 1396: 1946(M), 1949(P). WSP 1932: Drainage area. WRD Wash. 1974: 1973(M), WDR WA-76-1: 1975.

GAGE.--Water-stage recorder. Altitude of gage is 310 ft (94 m), from topographic map. November 1950 to September 1952 stilling well with nonrecording gage only.

REMARKS.--Records good. Many small diversions above station for irrigation and domestic use. No regulation.

AVERAGE DISCHARGE.--33 years (water years 1945-50, 1953-79), 62.0 ft^3/s (1.756 m^3/s, 30.73 m^3/s (781 mm/yr). 44,920 acre-ft/yr (55.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,820 ft^3/s (51.5 m^3/s) probably Feb. 17, 1949, gage height, 3.54 ft (1.079 m), from recorded range in stage, from rating curve extended above 600 ft^3/s (17.0 m^3/s); minimum, 8.0 ft^3/s (0.23 m^3/s) Oct. 13, 14, 1952; minimum gage height, 0.62 ft (0.189 m) Aug. 26, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 450 ft^3/s (12.7 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	(m^3/s)	Gage height (ft)	(m)
Feb. 6	2030	*522	14.8	*2.72	0.829

Minimum discharge 12 ft^3/s (0.34 m^3/s) all or part of each day Aug. 9-13, minimum gage height, 1.00 ft (0.305 m) Aug. 9-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	21	288	42	48	82	47	37	24	36	13	14
2	27	22	168	40	47	72	57	37	23	27	13	20
3	26	79	106	39	46	79	53	36	23	21	13	29
4	24	118	145	38	45	111	52	37	23	20	13	23
5	24	59	120	37	98	150	53	46	24	19	13	16
6	23	42	90	36	190	162	51	47	24	17	13	15
7	22	38	74	35	260	125	48	41	24	17	13	15
8	22	72	66	34	140	100	48	37	23	17	13	16
9	21	71	77	33	122	86	54	39	22	18	13	21
10	21	49	81	69	156	77	79	37	22	23	13	24
11	21	38	106	56	162	70	128	35	21	21	12	16
12	20	35	84	56	265	67	94	34	21	21	12	15
13	20	31	72	54	200	64	109	33	21	19	12	14
14	20	30	86	51	130	61	94	32	21	17	13	14
15	20	28	81	51	98	74	88	31	21	17	13	13
16	20	36	69	51	86	74	78	31	22	16	14	13
17	19	65	66	49	84	67	78	31	23	16	14	13
18	19	62	66	47	82	63	69	31	22	15	14	13
19	19	64	60	48	79	59	63	30	22	15	14	13
20	20	45	59	63	75	57	57	29	21	15	14	13
21	20	38	60	240	77	54	51	28	20	15	16	13
22	19	36	74	118	74	53	48	27	20	15	16	13
23	20	33	70	82	96	52	46	27	19	15	15	13
24	29	32	67	98	111	51	43	28	19	15	14	13
25	23	32	63	81	94	49	42	27	18	15	13	13
26	21	31	59	67	148	48	41	26	17	14	13	13
27	21	34	56	64	109	48	40	27	17	14	13	13
28	21	113	52	61	94	49	39	29	16	14	13	15
29	22	99	49	56	---	48	39	26	16	14	13	14
30	24	228	46	52	---	47	37	26	19	14	14	14
31	22	---	44	49	---	45	---	25	---	14	14	---
TOTAL	680	1681	2604	1897	3216	2244	1826	1007	628	546	416	464
MEAN	21.9	56.0	84.0	61.2	115	72.4	60.9	32.5	20.9	17.6	13.4	15.5
MAX	30	228	288	240	265	162	128	47	24	36	16	29
MIN	19	21	44	33	45	45	37	25	16	14	12	13
CFSM	.80	2.04	3.07	2.23	4.20	2.64	2.22	1.19	.76	.64	.49	.57
IN.	.92	2.28	3.54	2.58	4.37	3.05	2.48	1.37	.85	.74	.56	.63
AC-FT	1350	3330	5170	3760	6380	4450	3620	2000	1250	1080	825	920

CAL YR 1978 TOTAL 17048 MEAN 46.7 MAX 288 MIN 16 CFSM 1.70 IN 23.14 AC-FT 33810
WTR YR 1979 TOTAL 17209 MEAN 47.1 MAX 288 MIN 12 CFSM 1.72 IN 23.36 AC-FT 34130

12112600 BIG SOOS CREEK ABOVE HATCHERY, NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°09'51", on west line NW¼ sec.15, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 0.2 mi (0.3 km) upstream from fish hatchery, 2.7 mi (4.3 km) east of Auburn, and at mile 0.9 (1.4 km).

DRAINAGE AREA.--66.7 mi² (172.8 km²), excludes 3.67 mi² (9.51 km²) in vicinity of Youngs Lake, flow from which has been diverted to Cedar River since about 1935.

PERIOD OF RECORD.--August 1960 to current year. Chemical analyses October 1962 to September 1971, at site 1.0 mi (1.6 km) upstream from gaging station.

GAGE.--Water-stage recorder. Altitude of gage is 70 ft (21 m), from topographic map.

REMARKS.--Records good. City of Seattle diverts probably less than 2 ft³/s (0.057 m³/s) from Youngs Lake into Little Soos Creek, a tributary, during low flows. Prior to October 1966 fish hatchery diverted up to 19 ft³/s (0.538 m³/s) 0.5 mi (0.8 km) above station, which was returned below the station.

AVERAGE DISCHARGE.--13 years, (water years 1967-79), 128 ft³/s (3.625 m³/s), 26.06 in/yr (662 mm/yr), 92,740 acre-ft/yr (114 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 1,090 ft³/s (30.9 m³/s) Feb. 28, 1972, gage height, 6.17 ft (1.881 m); minimum, 11 ft³/s (0.312 m³/s) Sept. 5, 1963, gage height, 1.07 ft (0.326 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 440 ft³/s (12.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 7	0100	472	13.4	4.29	1.308	Feb. 13	0300	*572	16.2	*4.64	1.414

Minimum discharge, 24 ft³/s (0.680 m³/s) on all or part of Aug. 1, 3, 5, 7-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	41	375	80	96	266	96	75	49	54	25	28
2	49	44	313	77	92	238	104	75	48	53	25	49
3	47	111	258	75	90	226	99	73	47	40	25	61
4	45	186	284	73	112	282	96	77	46	36	25	51
5	44	127	306	72	155	377	97	89	48	36	25	41
6	44	92	258	71	282	370	94	100	47	34	25	37
7	43	80	218	70	420	330	92	86	47	34	25	35
8	42	78	193	69	330	286	93	81	46	34	24	35
9	42	85	189	68	343	253	97	80	45	33	24	42
10	41	81	186	103	355	226	106	78	44	34	24	38
11	41	73	196	109	377	208	110	74	43	33	24	36
12	40	70	173	99	503	193	108	71	42	33	24	33
13	39	66	155	96	545	180	124	69	42	32	24	32
14	39	64	155	89	452	169	119	67	42	32	25	31
15	39	64	146	89	382	184	116	65	41	31	26	29
16	39	89	136	86	339	180	113	65	43	30	26	29
17	39	116	133	84	326	166	113	64	44	28	28	29
18	38	112	127	80	302	157	111	62	44	28	31	29
19	38	143	122	81	284	150	105	60	45	27	31	28
20	39	122	117	95	260	141	100	59	44	27	30	28
21	41	102	116	240	251	135	96	57	43	26	31	29
22	39	92	124	206	230	130	94	56	42	27	33	28
23	39	85	122	166	244	125	91	55	41	27	30	28
24	57	80	120	182	288	119	88	54	39	27	28	29
25	48	77	114	166	319	114	86	53	38	27	27	31
26	43	75	107	143	360	112	84	53	38	27	27	31
27	41	80	100	135	341	109	81	56	37	26	27	29
28	41	133	95	127	306	108	79	59	37	27	27	31
29	46	135	89	117	---	103	78	55	36	27	27	31
30	43	240	86	108	---	100	77	53	39	26	27	32
31	41	---	83	102	---	96	---	51	---	25	28	---
TOTAL	1319	2943	5196	3358	8384	5833	2947	2072	1287	981	828	1020
MEAN	42.5	98.1	168	108	299	188	98.2	66.8	42.9	31.6	26.7	34.0
MAX	57	240	375	240	545	377	124	100	49	54	33	61
MIN	38	41	83	68	90	96	77	51	36	25	24	28
CFSM	.64	1.47	2.52	1.62	4.48	2.82	1.47	1.00	.64	.47	.40	.51
IN.	.74	1.64	2.90	1.87	4.68	3.25	1.64	1.16	.72	.55	.46	.57
AC-FT	2620	5840	10310	6660	16630	11570	5850	4110	2550	1950	1640	2020

CAL YR 1978 TOTAL 39736 MEAN 109 MAX 375 MIN 30 CFSM 1.63 IN 22.16 AC-FT 78820
WTR YR 1979 TOTAL 36168 MEAN 99.1 MAX 545 MIN 24 CFSM 1.49 IN 20.17 AC-FT 71740

12113000 GREEN RIVER NEAR AUBURN, WA

LOCATION.--Lat 47°18'45", long 122°12'10", in NW¼NW¼ sec.17, T.21 N., R.5 E., King County, Hydrologic Unit 17110013, on left bank 1.2 mi (1.9 km) east of Auburn, 1.8 mi (2.9 km) downstream from Big Soos Creek, and at mile 32.0 (51.5 km).

DRAINAGE AREA.--399 mi² (1,033 km²), excludes 3.67 mi² (9.51 km²) in the vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 19, 1936, nonrecording gage at same site and datum.

REMARKS.--Water-discharge records good. Since Dec. 5, 1961, flow regulated by Howard A. Hanson Reservoir (see sta 12105800), 32.5 mi (52.3 km) above station, for flood control and during summer months, to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 106 ft³/s (3.00 m³/s) from river at headworks near Palmer, 29 mi (46.7 km) above station, for municipal use. Minor diversions on upstream tributaries for domestic use.

AVERAGE DISCHARGE.--43 years, 1,364 ft³/s (38.63 m³/s), 988,200 acre-ft/yr (1,218 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft³/s (796 m³/s) Nov. 23, 1959, elevation, 69.75 ft (21.260 m); minimum, 81 ft³/s (2.29 m³/s) Sept. 23, 1952; minimum elevation, 53.22 ft (16.221 m) Aug. 7, 8, 9, 10, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,450 ft³/s (183 m³/s) Feb. 7, elevation, 59.99 ft (18.285 m); minimum, 223 ft³/s (6.32 m³/s) Sept. 17, 18, 19, 20, minimum elevation, 53.22 ft (16.221 m) Aug. 7, 8, 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	764	420	4640	886	628	1740	1120	2520	622	354	243	258
2	734	400	3020	900	606	1380	1130	2390	455	363	241	317
3	589	686	2310	879	540	1370	1080	2140	420	367	242	354
4	475	1340	3180	872	567	1510	1160	2030	415	363	241	313
5	460	1260	4270	837	872	2810	2130	2340	410	349	238	272
6	455	1240	2830	662	2080	5480	2330	2340	410	345	234	260
7	510	1380	2080	628	5270	6300	1740	2130	390	336	234	253
8	510	1990	1670	628	5060	5580	1730	1880	354	340	232	284
9	505	2660	1540	704	3080	3650	1720	1730	327	336	230	276
10	500	1800	1530	844	3670	2580	1730	1510	313	354	245	296
11	430	1580	1810	788	3630	2510	1740	1400	309	349	315	260
12	420	1240	2010	764	4030	2400	1670	1340	304	349	331	253
13	410	1080	1540	728	4410	2310	1830	1370	304	304	309	238
14	385	794	1660	704	3760	2220	2090	1490	304	280	291	234
15	390	734	2080	668	2820	2200	1970	1730	304	276	277	230
16	385	722	1660	525	2200	2220	1780	1810	304	272	266	230
17	385	1010	1610	515	1890	2140	1590	1820	296	268	271	227
18	395	1400	1460	510	1860	1960	1570	1700	296	260	266	223
19	381	1420	1210	515	1800	1700	1470	1520	300	260	266	223
20	376	1360	1200	686	1700	1550	1280	1360	296	261	259	249
21	376	1360	1080	1340	1540	1570	1150	942	292	260	264	268
22	363	1210	1170	1300	1420	1570	1160	893	288	262	275	253
23	363	984	1410	1300	1250	1560	1400	851	284	264	269	249
24	420	872	1570	1190	1310	1570	1680	886	280	268	261	249
25	505	710	1780	942	1400	1580	1660	872	276	263	258	238
26	430	698	1930	872	1840	1590	1650	830	272	263	259	238
27	372	698	2220	734	2150	1490	1930	851	272	256	262	234
28	390	1100	1970	710	2010	1380	2430	872	284	256	255	249
29	405	1730	1450	680	---	1300	2470	837	272	254	253	238
30	405	2950	921	662	---	1180	2530	740	284	252	255	238
31	415	---	858	633	---	1140	---	692	---	247	255	---
TOTAL	13903	36828	59669	24606	63393	69540	50920	45816	9937	9231	8097	7704
MEAN	448	1228	1925	794	2264	2243	1697	1478	331	298	261	257
MAX	764	2950	4640	1340	5270	6300	2530	2520	622	367	331	354
MIN	363	400	858	510	540	1140	1080	692	272	247	230	223
AC-FT	27580	73050	118400	48810	125700	137900	101000	90880	19710	18310	16060	15280

CAL YR 1978 TOTAL 340069 MEAN 932 MAX 4640 MIN 280 AC-FT 674500
WTR YR 1979 TOTAL 399644 MEAN 1095 MAX 6300 MIN 223 AC-FT 792700

12113000 GREEN RIVER NEAR AUBURN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1952 to current year.

INSTRUMENTATION.--Temperature recorder since March 1952.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.0°C July 28, 1958; minimum, 0.5°C Feb. 16, 17, 1956, Dec. 18-21, 1964, Nov. 21, 22, 1977, Jan. 31 to Feb. 2, 1979.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 22.5°C July 17-20; minimum recorded, 0.5°C Jan. 31 to Feb. 2.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	14.0	12.5	13.0							---	---	---
2	13.5	11.5	12.5							---	---	---
3	14.0	11.5	12.5							---	---	---
4	14.0	11.0	12.5							---	---	---
5	13.5	11.0	12.0							---	---	---
6	13.5	11.0	12.0							---	---	---
7	14.5	12.0	13.0							---	---	---
8	14.5	12.0	13.5							---	---	---
9	13.5	12.0	12.5							---	---	---
10	13.0	11.5	12.5							---	---	---
11	13.5	11.5	12.5							---	---	---
12	12.5	10.5	11.5							---	---	---
13	12.0	9.5	11.0							4.0	3.0	3.5
14	12.0	9.5	11.0							4.0	3.0	3.5
15	12.0	9.5	11.0							3.5	3.5	3.5
16	12.5	11.5	12.0							4.5	3.5	4.0
17	---	---	---							4.0	3.0	3.5
18	---	---	---							3.5	2.5	3.0
19	---	---	---							4.5	3.5	4.0
20	---	---	---							5.5	4.5	5.0
21	---	---	---							5.0	3.0	4.0
22	---	---	---							3.0	2.5	3.0
23	---	---	---							3.5	2.5	3.0
24	---	---	---							4.5	3.5	4.0
25	---	---	---							4.0	3.5	3.5
26	---	---	---							4.0	3.0	3.5
27	---	---	---							5.0	4.0	4.0
28	---	---	---							4.0	3.0	3.5
29	---	---	---							3.0	2.0	2.5
30	---	---	---							3.0	1.5	2.0
31	---	---	---							2.0	.5	1.5
MONTH	14.5	9.5	12.0							5.5	.5	3.5

12113000 GREEN RIVER NEAR AUBURN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	2.0	.5	1.5	6.0	4.5	5.0	7.0	5.5	6.5	10.0	8.0	9.0
2	2.5	.5	1.5	6.5	4.0	5.0	8.0	6.0	7.0	9.5	8.0	8.5
3	3.5	2.5	3.0	6.0	5.0	5.5	6.5	5.5	6.0	10.0	8.5	9.0
4	4.5	3.5	4.0	7.0	5.5	6.5	7.0	6.5	6.5	10.0	9.0	9.5
5	5.0	3.5	4.5	6.5	5.5	6.5	8.5	6.5	7.0	9.0	8.5	8.5
6	4.0	3.0	3.5	6.0	5.5	6.0	7.5	6.5	7.5	9.5	8.0	8.5
7	3.5	2.5	3.0	6.0	5.5	6.0	8.5	6.0	7.0	9.5	8.0	8.5
8	4.5	3.0	3.5	5.5	5.0	5.5	8.0	6.5	7.5	10.0	8.5	9.0
9	5.0	4.5	4.5	6.5	4.5	5.5	7.5	6.0	7.0	9.5	8.5	9.0
10	4.5	4.5	4.5	7.0	5.5	6.0	8.0	6.5	7.0	10.5	8.0	9.0
11	5.0	4.5	5.0	6.5	5.5	6.0	8.0	6.5	7.0	12.0	8.5	10.0
12	5.0	5.0	5.0	8.0	6.0	7.0	7.0	6.0	6.5	12.0	9.0	10.5
13	5.5	5.0	5.5	8.0	6.0	6.5	8.0	6.5	7.0	13.5	9.5	11.5
14	5.0	4.0	4.5	7.5	6.0	6.5	8.0	6.0	7.0	14.5	10.0	12.0
15	4.0	3.5	4.0	7.5	6.5	7.0	7.5	7.0	7.0	13.5	10.0	12.0
16	4.5	3.5	4.0	7.5	6.0	6.5	7.5	6.5	7.0	12.5	10.5	11.5
17	5.0	4.0	4.5	7.5	6.0	6.5	8.5	7.0	7.5	12.0	10.0	11.0
18	6.0	4.5	5.0	8.0	6.0	7.0	9.0	7.0	8.0	12.5	10.5	11.5
19	5.5	4.5	5.0	8.0	6.0	7.0	9.0	7.0	7.5	13.0	9.5	11.0
20	5.5	3.5	4.5	9.0	6.0	7.0	10.5	7.0	8.5	14.0	10.0	12.0
21	5.5	4.5	5.0	9.0	5.5	7.0	11.0	7.5	9.0	15.5	11.0	13.0
22	5.5	4.0	4.5	9.0	5.5	7.5	11.5	8.5	10.0	14.0	12.5	13.5
23	5.5	4.5	5.0	9.5	6.0	7.5	12.0	9.5	10.5	14.0	13.0	13.5
24	5.0	4.5	5.0	9.5	6.0	7.5	11.0	8.5	9.5	14.5	12.5	13.0
25	6.5	5.0	6.0	8.0	6.5	7.5	11.5	8.0	9.5	15.5	12.0	13.5
26	6.0	5.5	5.5	8.0	6.0	7.0	12.0	8.5	10.5	14.5	12.5	13.5
27	6.5	5.0	5.5	7.5	6.5	7.0	12.5	9.0	10.5	12.5	11.0	11.5
28	5.5	4.0	5.0	8.0	6.5	7.0	11.0	9.5	10.0	12.5	10.5	11.5
29	---	---	---	8.5	6.0	7.0	10.0	9.0	9.5	13.0	10.0	11.5
30	---	---	---	8.5	6.0	7.0	10.5	8.5	9.0	14.5	9.5	12.0
31	---	---	---	8.0	6.0	6.5	---	---	---	15.5	11.0	13.5
MONTH	6.5	.5	4.5	9.5	4.0	6.5	12.5	5.5	8.0	15.5	8.0	11.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	16.5	12.0	14.0	14.5	12.0	13.0	---	---	---	17.5	16.0	16.0
2	18.0	12.5	15.0	16.0	11.0	13.0	---	---	---	16.0	15.0	15.5
3	18.5	13.5	16.5	18.0	12.5	15.0	---	---	---	16.0	14.0	15.0
4	17.0	13.5	15.5	17.5	14.0	16.0	---	---	---	16.5	14.0	15.5
5	16.5	13.5	15.0	19.5	14.5	17.0	---	---	---	15.5	14.5	15.0
6	15.0	12.5	13.5	18.5	15.0	17.0	---	---	---	16.5	14.0	15.0
7	16.5	10.5	13.5	18.5	15.0	17.0	---	---	---	17.5	14.5	16.0
8	17.0	11.5	14.5	19.5	15.5	17.5	---	---	---	17.5	15.5	16.5
9	18.0	13.0	15.5	19.5	16.5	18.0	---	---	---	16.5	14.5	15.5
10	19.0	14.5	16.5	18.0	15.5	16.5	---	---	---	16.5	13.5	15.0
11	18.5	14.5	17.0	16.5	15.0	16.0	---	---	---	16.5	13.0	15.0
12	18.0	14.5	16.0	16.0	14.0	15.0	---	---	---	17.0	13.5	15.0
13	16.5	13.5	15.0	18.0	13.5	15.5	---	---	---	17.5	13.5	15.5
14	17.0	13.0	15.0	19.5	14.0	16.5	17.5	16.0	16.5	18.0	14.0	16.0
15	16.0	13.5	14.5	20.5	15.5	18.0	19.5	15.5	17.0	17.0	15.5	16.5
16	14.5	13.5	14.0	22.0	16.5	19.5	18.5	16.5	17.5	17.5	15.5	16.5
17	14.0	12.5	13.0	22.5	18.0	20.5	18.0	16.5	17.0	17.0	14.0	15.5
18	13.0	12.0	12.5	22.5	18.0	20.5	17.5	15.5	16.0	17.0	14.0	15.5
19	13.5	11.5	12.5	22.5	18.0	20.5	16.0	15.0	15.5	16.0	15.0	15.5
20	15.0	11.5	13.0	22.5	18.0	20.5	17.0	15.0	16.0	16.0	15.0	15.5
21	15.5	12.0	13.5	21.0	18.0	18.5	16.5	15.5	16.0	17.0	14.5	15.5
22	16.0	13.0	14.5	20.0	16.0	17.5	18.5	15.0	16.5	17.0	14.0	15.5
23	18.0	13.0	15.5	19.0	15.5	17.5	17.5	15.5	16.5	16.0	13.5	14.5
24	19.0	14.0	16.5	18.5	15.5	17.0	19.0	15.0	17.0	15.0	13.0	14.0
25	20.0	15.0	17.5	19.0	15.5	17.0	18.5	15.5	17.0	16.5	13.5	15.0
26	20.0	15.5	18.0	20.5	15.5	18.0	18.5	15.5	17.0	16.5	15.0	15.5
27	19.5	15.5	17.5	19.5	16.5	18.0	18.0	16.0	16.5	15.5	14.0	15.0
28	19.5	15.0	17.5	18.0	16.0	17.0	18.5	15.0	16.5	16.0	14.0	15.0
29	18.0	15.0	16.0	20.0	15.5	17.5	17.5	15.0	15.5	14.5	13.0	13.5
30	15.0	14.0	14.5	21.0	16.0	18.5	16.0	15.0	15.5	15.5	12.5	14.0
31	---	---	---	22.0	17.0	19.5	18.0	15.0	16.0	---	---	---
MONTH	20.0	10.5	15.0	22.5	11.0	17.5	19.5	15.0	16.5	18.0	12.5	15.5
YEAR	22.5	.5	11.0									

12113350 GREEN RIVER AT TUKWILA, WA

LOCATION.--Lat 47°27'55", long 122°14'48", in NW¼SW¼ sec.24, T.23 N., R.4 E., King County, Hydrologic Unit 17110013, on right bank under highway bridge 0.6 mi (1.0 km) southeast of Tukwila, 1.4 mi (2.3 km) upstream from Black River, and at mile 12.4 (20.0 km).

DRAINAGE AREA.--440 mi² (1,140 km²).

PERIOD OF RECORD.--October 1960 to current year. Chemical analyses October 1967 to September 1970.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Records fair. Flow regulated by Howard A. Hanson Reservoir (see sta 12105800) for flood control and during summer months to augment the natural river flow. City of Tacoma diverted an average daily discharge of about 106 ft³/s (3.00 m³/s) from river at headworks near Palmer, 49 mi (78.8 km) above station, for municipal use. Minor diversions and regulation on upstream tributaries. River stages are affected daily by backwater during high tide.

AVERAGE DISCHARGE.--19 years, 1,530 ft³/s (43.33 m³/s), 1,108,000 acre-ft/yr (1,370 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft³/s (343 m³/s) Jan. 31, 1965, elevation, 21.70 ft (6.614 m); minimum recorded, 195 ft³/s (5.52 m³/s) Sept. 14, 15, 1961; minimum observed elevation, 2.26 ft (0.689 m) Oct. 24, 1974, but may have been less during period of no gage-height record Oct. 14-27, 1974.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 24, 1959 reached a stage of 22.63 ft (6.898 m), present datum from gage-height record of stages above 14.2 ft (4.33 m), discharge, 13,200 ft³/s (374 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,590 ft³/s (187 m³/s) Mar. 7, elevation, 15.53 ft (4.734 m); minimum daily, 250 ft³/s (7.08 m³/s) Sept. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	803	490	4680	1050	773	2010	1300	2530	761	423	290	305
2	785	495	3590	1080	746	1640	1310	2440	650	423	294	324
3	704	692	2540	1050	710	1580	1280	2260	575	398	294	375
4	585	1230	2900	1020	722	1760	1240	2030	555	398	296	365
5	533	1330	4580	999	833	2350	1880	2250	545	385	285	340
6	518	1240	3230	914	1610	4980	2500	2380	545	378	280	318
7	525	1310	2270	839	4360	6490	1950	2230	525	365	275	312
8	545	1590	1880	824	5820	6160	1830	1950	500	365	274	330
9	545	2590	1720	878	3400	4570	1810	1820	475	370	273	345
10	530	1990	1710	1060	3700	2890	1830	1630	455	385	280	330
11	503	1630	1810	1040	3840	2790	1830	1500	450	378	335	316
12	485	1370	2140	950	4290	2660	1780	1410	438	370	360	290
13	473	1170	1750	932	4810	2550	1870	1420	426	345	330	280
14	450	975	1700	917	4380	2440	2100	1460	420	324	320	268
15	435	884	2160	887	3200	2410	2060	1690	420	312	305	265
16	433	905	1830	791	2590	2410	1940	1780	420	308	290	261
17	425	982	1760	737	2210	2350	1720	1810	420	306	300	258
18	445	1390	1630	716	2110	2200	1670	1730	418	304	288	255
19	448	1580	1400	713	2050	1970	1620	1560	418	300	287	250
20	420	1450	1350	821	1950	1780	1450	1480	410	300	286	270
21	418	1430	1270	1390	1830	1760	1300	1140	400	294	295	300
22	405	1330	1290	1490	1720	1750	1270	1010	395	292	310	290
23	410	1100	1510	1460	1560	1740	1320	968	385	296	300	282
24	450	971	1590	1430	1630	1710	1630	978	380	300	290	280
25	475	848	1830	1180	1710	1720	1730	989	380	298	285	272
26	490	806	1890	1050	1970	1740	1670	941	373	298	288	270
27	445	815	2190	947	2310	1670	1790	935	370	292	290	265
28	445	971	2050	872	2250	1590	2360	954	370	290	285	272
29	465	1550	1660	851	---	1490	2450	938	370	288	280	263
30	468	2380	1180	818	---	1400	2490	866	375	288	283	261
31	478	---	1040	785	---	1340	---	794	---	290	280	---
TOTAL	15539	37494	64130	30491	69084	75900	52980	47873	13626	10363	9128	8812
MEAN	501	1250	2069	984	2467	2448	1766	1544	454	334	294	294
MAX	803	2590	4680	1490	5820	6490	2500	2530	761	423	360	375
MIN	405	490	1040	713	710	1340	1240	794	370	288	273	250
AC-FT	30820	74370	127200	60480	137000	150500	105100	94960	27030	20560	18110	17480

CAL YR 1978 TOTAL 383477 MEAN 1051 MAX 4680 MIN 321 AC-FT 760600
WTR YR 1979 TOTAL 435420 MEAN 1193 MAX 6490 MIN 250 AC-FT 863700

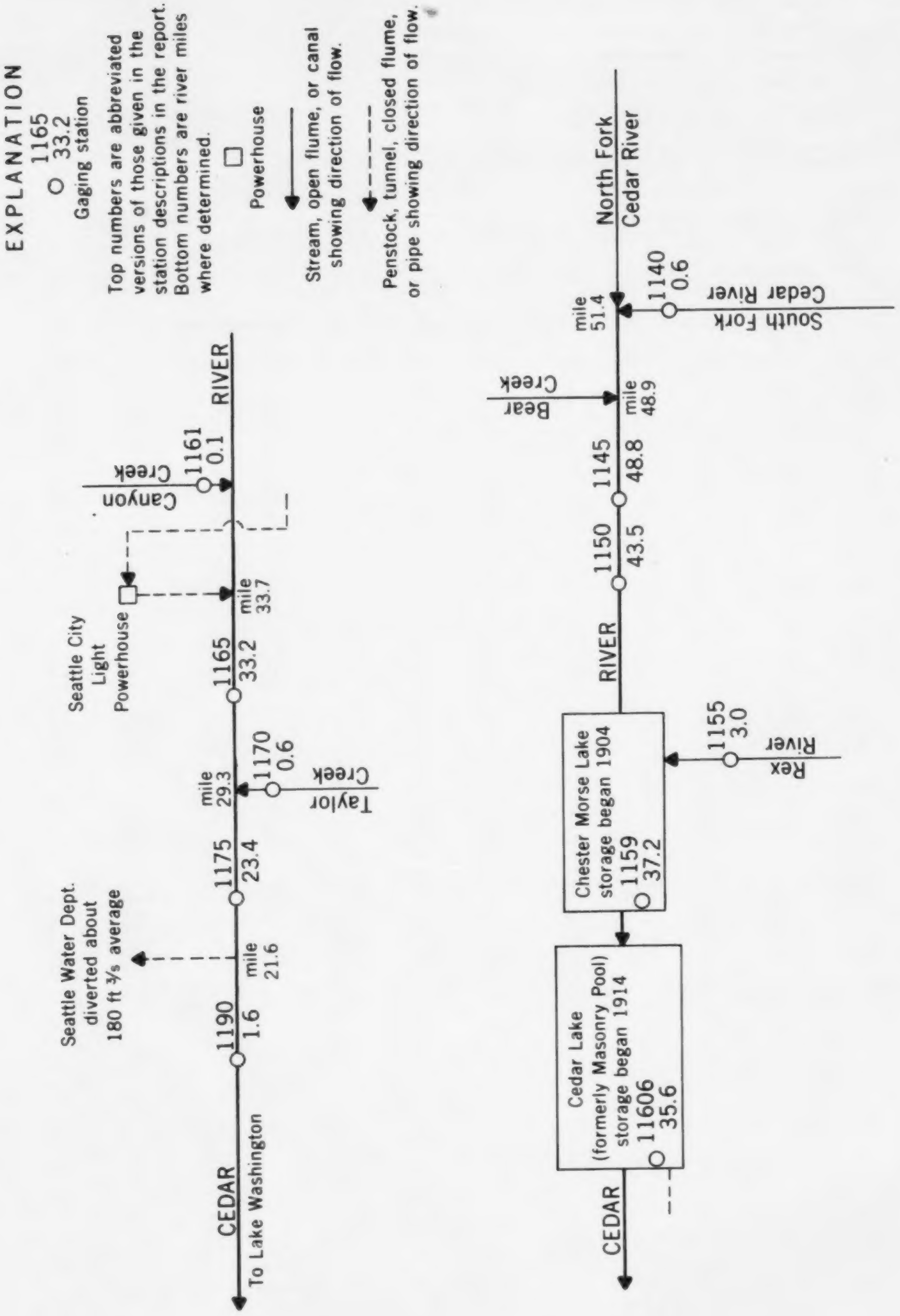

EXPLANATION
1165
33.2
○
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
□
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
CEDAR
To Lake Washington
1190
1.6
Seattle Water Dept. diverted about 180 ft³/s average
mile 21.6
1175
23.4
mile 29.3
1170
0.6
Taylor Creek
1165
33.2
Seattle City Light Powerhouse
mile 33.7
1161
0.1
Canyon Creek
RIVER
CEDAR
Cedar Lake (formerly Masonry Pool) storage began 1914
11606
35.6
Chester Morse Lake storage began 1904
1159
37.2
1155
3.0
Rex River
RIVER
1150
43.5
1145
48.8
mile 48.9
Bear Creek
mile 51.4
1140
0.6
South Fork Cedar River
North Fork Cedar River

Figure 13. Gaging stations in Lake Washington basin (Cedar River).

12114000 SOUTH FORK CEDAR RIVER NEAR LESTER, WA

LOCATION.--Lat 47°18'30", long 121°31'00", in NE¼SE¼ sec.15, T.21 N., R.10 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank under logging road bridge, 0.6 mi (1.0 km) upstream from confluence with North Fork and 6.7 mi (10.8 km) north of Lester.

DRAINAGE AREA.--6.00 mi^2 (15.54 km^2).

PERIOD OF RECORD.--October 1944 to current year.

REVISED RECORDS.--WSP 1446: 1953-54. WSP 1736: 1950(M).

GAGE.--Water-stage recorder. Concrete control Aug. 31, 1951, to Dec. 9, 1956, and since Oct. 8, 1957. Altitude of gage is 2,300 ft (701 m), from topographic map.

REMARKS.--Records good except those for periods of no gage-height record Dec. 29-Jan. 19, Jan. 23-Feb. 7, July 9-26, Aug. 2-23, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--35 years, 38.0 ft^3/s (1.076 m^3/s) 85.87 in/yr (2,181 mm/yr), 27,530 acre-ft/yr (33.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,340 ft^3/s (66.3 m^3/s) Dec. 9, 1956, gage height, 10.41 ft (3.173 m), from floodmarks, from rating curve extended above 300 ft^3/s (8.50 m^3/s) on basis of slope-area measurement of peak flow; minimum, 1.9 ft^3/s (0.054 m^3/s) Nov. 27, 28, 1952, gage height, 2.80 ft (0.853 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 152 ft^3/s (4.30 m^3/s) Mar. 7, gage height, 5.49 ft (1.673 m), no peak above base of 200 ft^3/s (5.66 m^3/s); minimum, 3.5 ft^3/s (0.099 m^3/s) on all or part of each day Sept. 27-30, gage height, 4.07 ft (1.241 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	6.6	64	17	7.9	13	22	112	45	22	5.6	4.3
2	14	7.2	50	16	7.8	12	21	103	54	21	5.4	6.1
3	13	14	61	15	7.9	12	19	99	58	18	5.2	6.1
4	12	37	91	14	8.8	26	32	112	53	18	5.2	5.4
5	12	25	75	13	17	68	41	110	49	17	5.0	4.9
6	11	22	60	13	35	139	43	103	46	16	4.8	4.7
7	10	28	49	12	65	136	41	91	38	15	4.6	4.5
8	10	72	42	11	31	98	41	83	33	14	4.6	4.7
9	9.7	52	36	11	58	71	42	75	31	14	4.4	5.2
10	9.3	41	31	12	58	53	40	68	34	15	4.4	4.9
11	9.0	33	34	13	52	46	37	67	36	14	4.3	4.5
12	8.6	28	28	13	60	45	34	70	33	13	4.3	4.3
13	8.3	24	26	12	60	43	37	77	30	12	4.3	4.3
14	8.0	21	38	11	47	41	35	88	25	11	4.3	4.2
15	7.7	19	31	11	42	43	32	94	22	11	4.3	4.2
16	7.7	26	30	10	35	42	31	99	20	10	4.3	4.2
17	7.4	43	28	10	29	40	31	91	20	9.6	4.3	4.0
18	7.2	37	25	10	25	37	29	86	18	9.0	4.3	4.0
19	6.9	33	23	11	22	36	28	80	19	8.7	4.3	4.0
20	7.4	29	21	13	20	36	27	77	19	8.4	4.2	4.0
21	6.9	25	20	19	18	36	28	83	18	8.2	4.5	3.8
22	6.6	23	23	16	17	36	32	88	17	8.0	4.2	3.8
23	6.6	21	24	14	16	38	39	89	16	7.5	4.0	3.8
24	9.0	18	59	13	14	41	45	78	16	7.2	4.0	3.6
25	6.9	17	47	12	15	42	56	72	17	7.0	3.8	3.6
26	6.3	16	44	12	17	40	75	77	18	6.8	8.6	3.6
27	6.3	19	38	11	15	37	103	65	17	6.6	5.6	3.6
28	6.6	28	28	10	14	33	120	52	16	6.3	4.3	3.6
29	7.7	29	23	9.6	---	30	118	42	15	6.1	4.2	3.5
30	7.2	74	21	8.8	---	27	116	38	17	5.8	4.2	3.5
31	6.6	---	19	8.3	---	24	---	39	---	5.8	4.3	---
TOTAL	270.9	867.8	1189	381.7	814.4	1421	1395	2508	850	352.0	143.8	128.9
MEAN	8.74	28.9	38.4	12.3	29.1	45.8	46.5	80.9	28.3	11.4	4.64	4.30
MAX	15	74	91	19	65	139	120	112	58	22	8.6	6.1
MIN	6.3	6.6	19	8.3	7.8	12	19	38	15	5.8	3.8	3.5
CFSM	1.46	4.82	6.40	2.05	4.85	7.63	7.75	13.5	4.72	1.90	.77	.72
IN.	1.68	5.38	7.37	2.37	5.05	8.81	8.65	15.55	5.27	2.18	.89	.80
AC-FT	537	1720	2360	757	1620	2820	2770	4970	1690	698	285	256

CAL YR 1978 TOTAL 8415.1 MEAN 23.1 MAX 91 MIN 3.5 CFSM 3.85 IN 52.16 AC-FT 16690
WTR YR 1979 TOTAL 10322.5 MEAN 28.3 MAX 139 MIN 3.5 CFSM 4.72 IN 63.99 AC-FT 20470

12114500 CEDAR RIVER BELOW BEAR CREEK, NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°20'32", long 121°32'52", in SE¼SE¼ sec.32, T.22 N., R.10 E., King County, Hydrologic Unit 17110012, on right bank 500 ft (152 m) downstream from Bear Creek and 12.2 mi (19.6 km) southeast of Cedar Falls.

DRAINAGE AREA.--25.4 mi² (65.8 km²).

PERIOD OF RECORD.--October 1945 to December 1963, October 1975 to current year.

REVISED RECORDS.--WSP 1716: 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Altitude of gage is 1,880 ft (573 m) from topographic map. Prior to Sept. 16, 1960, at site 90 ft (27.4 m) upstream at datum 2.35 ft (0.714 m) higher.

REMARKS.--Records good. No regulation or diversion above station. Seattle Water Department satellite telemetry at station.

AVERAGE DISCHARGE.--22 years (water years 1946-63, 1976-79), 174 ft³/s (4.928 m³/s), 93.03 in/yr (2,363 mm/yr), 126,100 acre-ft/yr (155 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,620 ft³/s (215.8 m³/s) Nov. 22, 1959, gage height, 6.98 ft (2.128 m) site and datum then in use, from rating curve extended above 890 ft³/s (25.2 m³/s) on basis of slope-area measurement of peak flow; minimum, 12 ft³/s (0.34 m³/s) Nov. 27, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s (19.8 m³/s) and maximum (*) from rating curve extended above 510 ft³/s (14.4 m³/s) on basis of slope-area measurement at gage height 9.37 (2.856 m);

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	0400	*605	17.13	*4.20	1.280

Minimum discharge, 19 ft³/s (0.538 m³/s) on all or part of each day Sept. 24-30, gage height, 2.01 ft (0.613 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	31	220	81	46	92	108	379	239	136	33	26
2	68	35	184	75	45	87	106	356	278	124	33	36
3	64	77	225	70	46	84	102	341	296	110	32	36
4	59	200	356	66	55	124	200	372	287	106	32	31
5	56	133	256	62	95	242	233	372	278	100	31	27
6	52	111	207	59	160	513	218	356	257	97	29	26
7	51	128	178	56	295	555	200	314	207	90	28	25
8	48	280	156	53	186	400	192	281	187	85	28	26
9	47	190	144	50	220	296	197	260	190	81	27	32
10	46	155	133	55	237	248	185	242	207	93	27	28
11	44	133	149	61	225	221	175	236	221	80	26	26
12	42	119	129	59	256	215	167	245	203	80	26	25
13	39	103	120	57	250	207	205	269	185	71	26	24
14	37	93	155	53	200	203	192	302	155	68	26	23
15	35	84	138	51	172	210	170	332	138	63	26	23
16	35	111	129	50	155	207	157	356	132	60	26	23
17	34	180	120	48	140	190	152	338	126	57	26	22
18	33	153	111	47	131	177	140	326	122	54	26	22
19	31	137	103	48	120	170	134	302	134	51	26	21
20	35	122	98	66	110	165	126	296	128	50	25	21
21	33	111	100	96	101	165	128	323	120	48	28	21
22	30	100	126	70	95	165	138	350	116	47	26	21
23	30	92	128	67	90	170	155	362	116	44	25	20
24	50	85	215	66	98	180	177	329	116	43	24	20
25	34	77	172	63	104	182	205	317	124	42	23	19
26	31	71	155	61	111	172	248	338	122	39	27	19
27	30	82	142	60	108	160	317	290	116	38	26	19
28	31	129	126	57	98	147	368	245	114	37	23	21
29	42	128	110	56	---	136	382	203	106	36	22	19
30	37	247	100	52	---	126	375	185	118	35	23	19
31	34	---	87	48	---	116	---	192	---	34	25	---
TOTAL	1312	3697	4772	1863	3949	6325	5852	9409	5136	2099	831	721
MEAN	42.3	123	154	60.1	141	204	195	304	171	67.7	26.8	24.0
MAX	74	280	356	96	295	555	382	379	296	136	33	36
MIN	30	31	87	47	45	84	102	185	106	34	22	19
CFSM	1.67	4.84	6.06	2.37	5.55	8.03	7.68	12.0	6.73	2.67	1.06	.95
IN.	1.92	5.41	6.99	2.73	5.78	9.26	8.57	13.78	7.52	3.07	1.22	1.06
AC-FT	2600	7330	9470	3700	7830	12550	11610	18660	10190	4160	1650	1430

CAL YR 1978 TOTAL 40577 MEAN 111 MAX 356 MIN 23 CFSM 4.37 IN 59.43 AC-FT 80480
WTR YR 1979 TOTAL 45966 MEAN 126 MAX 555 MIN 19 CFSM 4.96 IN 67.32 AC-FT 91180

12115000 CEDAR RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°22'13", long 121°37'26", in SE¼SW¼ sec.23, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 1.4 mi (2.3 km) upstream from Chester Morse Lake, 8.3 mi (13.4 km) southeast of Cedar Falls, and at mile 43.5 (70.0 km).

DRAINAGE AREA.--40.7 mi² (105.4 km²).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946-48, 1950(P), 1951. WSP 1516: 1946(M), 1947-48(P), 1950-51(M), 1953-54(P). 1955(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,560 ft (475 m), from topographic map. Prior to Oct. 26, 1957, at site 80 ft (24 m) downstream at same datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--34 years, 270 ft³/s (7.646 m³/s), 90.09 in/yr (90.09 in/yr (2,288 mm/yr) 195,600 acre-ft/yr (241 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,490 ft³/s (269 m³/s) Nov. 22, 1959, gage height, 11.34 ft (3.456 m), from high-water mark in well, from rating curve extended above 4,300 ft³/s (122 m³/s), on basis of slope-area measurements at gage heights 10.16 ft (3.097 m) and 11.34 ft (3.456 m); maximum gage height, 11.4 ft (3.47 m) Feb. 11, 1951, backwater from Chester Morse Lake; minimum discharge, 20 ft³/s (0.57 m³/s) Nov. 30 to Dec. 1, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34.0 m³/s) and maximum(*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	0500	*1,190	33.7	*5.88	1.792

Minimum discharge, 30 ft³/s (0.85 m³/s) on all or part of each day Sept. 25-30, gage height, 2.03 ft (0.619 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	57	460	120	69	155	171	608	287	183	48	39
2	108	58	342	110	68	140	173	560	350	173	47	56
3	101	114	384	104	69	133	166	520	389	148	47	64
4	95	341	686	98	80	204	308	588	380	142	46	56
5	89	230	484	92	145	503	405	596	362	134	45	46
6	83	180	372	87	336	1020	368	580	335	127	45	45
7	80	175	297	83	655	1090	320	500	270	120	43	40
8	77	493	247	78	369	740	300	433	250	113	42	40
9	75	335	222	76	478	531	305	386	255	108	41	47
10	74	250	198	85	527	425	287	353	270	124	40	47
11	71	203	252	95	481	372	280	338	290	107	39	43
12	68	175	215	90	575	360	275	347	270	108	39	39
13	65	151	191	88	575	342	371	377	240	95	38	37
14	61	136	260	82	421	330	350	440	205	89	39	35
15	60	124	235	79	324	345	290	486	180	85	38	35
16	58	157	209	76	262	345	257	540	170	80	39	35
17	57	326	189	74	226	312	245	504	160	77	41	34
18	55	281	173	72	215	282	227	479	155	74	39	33
19	54	235	157	73	191	260	213	430	170	71	40	33
20	58	197	145	97	169	249	201	412	160	69	39	33
21	57	175	150	157	157	247	199	454	150	67	41	33
22	52	156	209	117	143	246	210	500	145	65	43	32
23	51	142	209	105	136	251	231	528	145	62	39	31
24	79	132	390	102	139	265	260	465	145	61	37	31
25	61	123	318	97	177	272	302	437	153	59	35	31
26	55	114	260	93	202	255	368	472	148	58	35	30
27	53	117	226	92	202	237	493	409	142	56	42	30
28	54	199	187	87	177	221	600	335	138	55	36	31
29	68	192	164	85	---	206	624	270	132	53	35	31
30	66	474	145	78	---	195	608	239	145	51	34	30
31	60	---	130	71	---	183	---	239	---	49	38	---
TOTAL	2164	6042	8106	2843	7568	10716	9407	13825	6591	2863	1250	1147
MEAN	69.8	201	261	91.7	270	346	314	446	220	92.4	40.3	38.2
MAX	119	493	686	157	655	1090	624	608	389	183	48	64
MIN	51	57	130	71	68	133	166	239	132	49	34	30
CFSM	1.72	4.94	6.41	2.25	6.63	8.50	7.72	11.0	5.41	2.27	.99	.94
IN.	1.98	5.52	7.41	2.60	6.92	9.79	8.60	12.64	6.02	2.62	1.14	1.05
AC-FT	4290	11980	16080	5640	15010	21260	18660	27420	13070	5680	2480	2280

CAL YR 1978 TOTAL 62190 MEAN 170 MAX 686 MIN 35 CFSM 4.18 IN 56.84 AC-FT 123400
WTR YR 1979 TOTAL 72522 MEAN 199 MAX 1090 MIN 30 CFSM 4.89 IN 66.28 AC-FT 143800

12115500 REX RIVER NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°21'03", long 121°39'43", in NE¼NW¼ sec.33, T.22 N., R.9 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 3.0 mi (4.8 km) upstream from mouth and Chester Morse Lake and 7.5 mi (12.1 km) southeast of Cedar Falls.

DRAINAGE AREA.--13.4 mi^2 (34.7 km^2).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1286: 1946, 1948(P), 1949(M), 1950(P), 1952(M). WSP 1446: 1946(M), 1951, 1953-55(M). WSP 1932: Drainage area. WRD Wash. 1974: 1973.

GAGE.--Water-stage recorder. Altitude of gage is 1,600 ft (488 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--34 years, 105 ft^3/s (2.974 m^3/s), 106.41 in/yr (2,703 mm/yr), 76,100 acre-ft/yr (93.8 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,200 ft^3/s (119 m^3/s) Nov. 22, 1959, gage height, 8.20 ft (2.499 m) from rating curve extended above 1,600 ft^3/s (45.3 m^3/s) on basis of contracted-opening measurement at gage height 7.19 ft (2.192 m) and slope-area measurement of peak flow; maximum gage height, 9.31 ft (2.838 m) Nov. 19, 1962, backwater from debris; minimum discharge, 4.3 ft^3/s (0.12 m^3/s) Nov. 29, 1952, gage height, 2.43 ft (0.741 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft^3/s (19.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	(m^3/s)	Gage height (ft)	(m)
Feb. 6	2000	*940	26.6	*5.75	1.753

Minimum discharge, 7.3 ft^3/s (0.21 m^3/s) Aug. 29, 30, gage height, 3.20 ft (0.975 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	26	219	37	30	57	50	255	81	76	12	12
2	44	35	153	34	30	49	46	231	85	55	12	20
3	40	119	271	31	31	44	45	227	94	42	12	24
4	38	243	324	29	34	135	50	271	89	39	12	22
5	35	139	195	27	119	370	188	275	105	36	12	17
6	32	96	139	25	370	564	163	259	89	33	12	16
7	31	170	108	23	370	500	134	227	67	31	11	13
8	29	255	83	22	184	288	116	191	60	30	11	14
9	28	170	76	21	311	199	126	167	55	28	10	23
10	29	119	69	27	271	149	110	149	54	31	10	20
11	26	87	174	38	263	132	95	146	53	30	9.7	16
12	25	72	116	32	324	132	90	153	48	31	9.3	15
13	24	58	92	32	293	122	170	184	48	26	9.3	13
14	22	51	156	30	195	119	162	199	41	24	9.3	12
15	21	45	113	29	132	153	114	215	38	23	9.3	12
16	21	146	89	30	96	142	94	235	36	22	11	12
17	20	302	74	29	78	113	93	203	34	21	11	12
18	19	188	60	29	76	94	80	191	33	20	9.7	11
19	19	132	53	34	65	87	70	163	34	19	10	11
20	24	99	47	108	55	85	63	170	34	19	9.7	11
21	20	81	51	200	49	85	66	181	32	18	12	11
22	18	67	85	89	44	87	80	199	30	18	11	10
23	23	55	119	69	42	92	102	184	29	17	9.3	10
24	48	49	279	58	42	96	129	156	27	17	8.9	9.7
25	26	44	149	53	67	96	138	149	26	16	8.5	9.3
26	24	41	110	46	96	83	187	153	25	15	8.1	9.3
27	23	62	85	41	89	72	243	122	24	14	7.7	9.7
28	26	116	65	38	70	67	271	102	24	14	7.7	12
29	33	125	54	35	---	61	271	76	23	14	7.7	9.7
30	29	315	47	33	---	56	255	69	35	13	8.1	9.3
31	26	---	41	32	---	53	---	72	---	13	13	---
TOTAL	872	3507	3696	1361	3826	4382	3801	5574	1453	805	314.3	406.0
MEAN	28.1	117	119	43.9	137	141	127	180	48.4	26.0	10.1	13.5
MAX	49	315	324	200	370	564	271	275	105	76	13	24
MIN	18	26	41	21	30	44	45	69	23	13	7.7	9.3
CFSM	2.10	8.73	8.88	3.28	10.2	10.5	9.48	13.4	3.61	1.94	.75	1.01
IN.	2.42	9.74	10.26	3.78	10.62	12.16	10.55	15.47	4.03	2.23	.87	1.13
AC-FT	1730	6960	7330	2700	7590	8690	7540	11060	2880	1600	623	805

CAL YR 1978 TOTAL 25150.4 MEAN 68.9 MAX 324 MIN 9.1 CFSM 5.14 IN 69.82 AC-FT 49890
WTR YR 1979 TOTAL 29997.3 MEAN 82.2 MAX 564 MIN 7.7 CFSM 6.13 IN 83.27 AC-FT 59500

12115900 CHESTER MORSE LAKE AT CEDAR FALLS, WA

LOCATION.--Lat 47°24'34", long 121°43'22", in SW¼NE¼ sec.12, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, 100 ft (30 m) upstream of Crib Dam, 3.1 mi (5.0 km) southeast of Cedar Falls.

DRAINAGE AREA.--78.4 mi^2 (203 km^2).

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Staff gage. Datum of gage is 7.39 ft (2.252 m) National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--Record good.

COOPERATION.--Gage readings furnished by City of Seattle.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 1,566.82 ft (477.567 m) Dec. 3, 1977; minimum observed, 1,535.20 ft (467.929 m) Sept. 29, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 1,554.81 ft (473.906 m) May 7; minimum observed, 1,535.20 ft (467.929 m) Sept. 29.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1545.78	1538.94	1546.00	1545.45	1541.75	1545.90	1546.43	1553.38	1553.29	1546.00	1541.80	1537.80
2	1545.68	1538.73	1546.20	1545.00	1541.54	1545.74	1546.60	1553.89	1553.01	1546.00	1541.80	1537.80
3	1545.50	1538.70	1546.41	1544.80	1541.40	1545.55	1546.38	1554.43	1552.80	1545.85	1541.52	1537.80
4	1545.32	1539.35	1547.15	1545.00	1541.22	1545.58	1546.33	1554.55	1552.78	1545.80	1541.38	1537.80
5	1545.11	1540.02	1547.25	1544.80	1541.40	1546.30	1546.68	1554.65	1552.67	1545.70	1541.20	1537.80
6	1544.85	1540.34	1547.05	1544.90	1541.62	1547.40	1546.84	1554.75	1552.60	1545.60	1541.06	1537.70
7	1544.74	1540.45	1546.75	1544.90	1544.10	1548.55	1547.16	1554.81	1552.41	1545.42	1540.92	1537.70
8	1544.74	1541.38	1546.65	1544.87	1545.25	1549.43	1547.08	1554.66	1552.15	1545.40	1540.76	1537.60
9	1544.72	1542.40	1546.40	1544.90	1546.00	1549.70	1546.96	1554.42	1552.00	1545.21	1540.60	1537.65
10	1544.72	1542.80	1546.18	1544.95	1546.88	1549.77	1546.98	1554.08	1551.84	1545.20	1540.45	1537.60
11	1544.62	1543.00	1546.22	1544.95	1547.14	1549.71	1547.08	1553.70	1551.53	1545.06	1540.32	1537.40
12	1544.56	1543.05	1546.40	1545.10	1547.30	1549.88	1547.21	1553.58	1551.28	1545.00	1540.18	1537.20
13	1544.22	1543.00	1546.25	1545.10	1547.60	1549.75	1547.62	1553.59	1550.89	1544.80	1540.00	1537.20
14	1543.80	1542.96	1546.20	1544.90	1547.60	1549.53	1548.08	1553.68	1550.71	1544.75	1539.82	1537.18
15	1543.40	1542.86	1546.20	1544.78	1547.20	1549.39	1548.49	1553.93	1550.31	1544.60	1539.72	1537.00
16	1543.08	1542.80	1546.10	1544.50	1546.95	1549.40	1548.78	1554.24	1549.94	1544.40	1539.60	1536.90
17	1542.72	1543.55	1546.00	1544.00	1546.65	1549.18	1548.78	1554.60	1549.57	1544.22	1539.45	1536.80
18	1542.42	1544.30	1545.95	1543.00	1546.50	1549.00	1549.02	1554.68	1549.13	1544.00	1539.35	1536.70
19	1542.08	1544.60	1545.80	1543.00	1546.32	1549.00	1549.12	1554.47	1548.62	1544.00	1539.25	1536.60
20	1541.74	1544.80	1545.65	1543.10	1546.10	1548.93	1549.20	1554.44	1548.25	1543.80	1539.10	1536.60
21	1541.48	1544.76	1545.60	1542.82	1545.95	1548.92	1549.26	1554.51	1547.78	1543.60	1538.98	1536.40
22	1541.18	1544.74	1545.46	1542.95	1545.80	1548.78	1549.35	1554.53	1547.49	1543.40	1538.92	1536.30
23	1540.86	1544.75	1545.58	1542.86	1545.64	1548.74	1549.44	1554.70	1547.18	1543.20	1538.80	1536.20
24	1540.74	1544.60	1546.00	1542.80	1545.55	1548.75	1549.56	1554.49	1547.00	1543.00	1538.64	1536.15
25	1540.55	1544.40	1546.30	1542.70	1545.62	1548.81	1549.74	1554.40	1546.74	1542.90	1538.52	1536.00
26	1540.28	1544.25	1546.25	1542.40	1545.80	1548.84	1550.03	1554.28	1546.38	1542.70	1538.40	1535.80
27	1540.00	1544.00	1546.18	1542.35	1545.92	1548.40	1550.55	1554.32	1546.36	1542.55	1538.28	1535.70
28	1539.70	1544.08	1546.00	1542.15	1545.95	1548.37	1551.20	1554.27	1546.18	1542.36	1538.14	1535.38
29	1539.50	1544.16	1545.91	1542.15	---	1547.80	1551.99	1554.11	1546.02	1542.20	1538.04	1535.20
30	1539.32	1544.80	1546.00	1542.10	---	1547.44	1552.66	1553.86	1545.90	1542.00	1537.92	1535.50
31	1539.12	---	1546.10	1542.10	---	1547.07	---	1553.60	---	1542.00	1537.80	---
MEAN	1542.79	1542.75	1546.20	1543.85	1545.24	1548.37	1548.49	1554.25	1549.76	1544.22	1539.70	1536.85
MAX	1545.78	1544.80	1547.25	1545.45	1547.60	1549.88	1552.66	1554.81	1553.29	1546.00	1541.80	1537.80
MIN	1539.12	1538.70	1545.46	1542.10	1541.22	1545.55	1546.33	1553.38	1545.90	1542.00	1537.80	1535.20

WTR YR 1979 MEAN 1545.21 MAX 1554.81 MIN 1535.20

12116060 CEDAR LAKE (MASONRY POOL) NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°24'43", long 121°45'04", in NE¼NW¼ sec.11, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, at Masonry Dam, 1.6 mi (2.6 km) southeast of Cedar Falls.

DRAINAGE AREA.--78.4 mi^2 (203 km^2).

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 7.39 ft (2.252 m) National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--Records good.

COOPERATION.--Gage readings furnished by city of Seattle.

EXTREMES FOR PERIOD OF RECORD .--Maximum gage height observed, 1,566.82 ft (477.567 m) Dec. 3, 1977; minimum not determined (during period Aug. 2 to Sept. 19, 1978, while the pool was drained for maintenance).

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 1,554.81 ft (473.906 m) May 7; minimum observed, 1,515.17 ft (461.824 m) Nov. 2.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1539.92	1516.12	1526.03	1525.56	1527.88	1528.40	1546.43	1553.38	1553.29	1542.35	1531.55	1521.61
2	1539.45	1515.17	1528.12	1525.93	1527.40	1528.79	1546.10	1553.89	1553.01	1542.10	1531.01	1521.62
3	1537.99	1516.32	1532.24	1522.76	1526.76	1530.07	1544.18	1554.43	1552.80	1541.72	1530.57	1521.66
4	1537.46	1517.41	1537.12	1521.55	1527.07	1530.53	1543.31	1554.55	1552.78	1541.09	1530.16	1521.64
5	1536.28	1518.30	1539.75	1523.40	1527.40	1532.01	1542.76	1554.65	1552.67	1540.30	1529.85	1521.62
6	1535.31	1519.33	1540.31	1524.33	1527.70	1536.14	1546.13	1554.75	1552.60	1539.56	1529.59	1521.59
7	1532.20	1520.32	1540.00	1524.90	1528.98	1546.80	1547.02	1554.81	1552.41	1539.56	1529.20	1521.52
8	1529.22	1521.57	1540.29	1525.55	1530.30	1549.43	1546.44	1554.66	1552.15	1539.48	1528.89	1521.50
9	1526.63	1523.64	1538.19	1526.13	1529.96	1549.70	1545.29	1554.42	1552.00	1539.58	1528.50	1521.55
10	1523.82	1524.85	1535.42	1526.80	1533.90	1549.77	1546.52	1554.08	1551.84	1539.29	1528.13	1521.40
11	1520.53	1525.79	1535.75	1527.25	1536.66	1549.71	1546.89	1553.70	1551.53	1539.04	1527.97	1521.33
12	1516.85	1526.63	1535.25	1527.43	1539.56	1549.88	1547.17	1553.58	1551.28	1538.93	1527.83	1521.20
13	1519.90	1527.17	1534.05	1527.62	1543.84	1549.75	1547.42	1553.59	1550.89	1538.87	1527.53	1521.18
14	1522.38	1525.44	1532.40	1529.40	1546.63	1549.53	1548.08	1553.68	1550.71	1538.77	1527.04	1521.12
15	1523.72	1524.08	1532.05	1530.10	1546.18	1549.39	1548.49	1553.92	1550.31	1538.70	1526.69	1520.85
16	1524.28	1525.20	1532.00	1529.05	1544.73	1549.40	1548.78	1554.24	1549.94	1538.57	1526.33	1520.69
17	1524.27	1526.41	1534.45	1529.30	1542.96	1549.18	1548.78	1554.60	1549.57	1538.34	1525.98	1520.33
18	1524.30	1528.23	1535.16	1528.54	1539.82	1549.00	1549.02	1554.68	1549.13	1538.15	1525.62	1520.08
19	1524.25	1529.27	1531.92	1528.74	1536.52	1549.00	1549.12	1554.47	1548.62	1537.87	1525.30	1519.76
20	1524.05	1528.79	1529.60	1529.13	1535.80	1548.93	1549.20	1554.44	1548.25	1537.63	1524.90	1519.57
21	1523.79	1527.25	1528.65	1529.55	1534.72	1548.92	1549.26	1554.51	1547.78	1537.35	1524.53	1519.29
22	1523.17	1525.42	1529.35	1529.67	1532.80	1548.78	1549.35	1554.53	1547.49	1537.06	1524.24	1519.15
23	1522.72	1525.53	1529.73	1529.77	1530.13	1548.74	1549.44	1554.70	1547.18	1536.72	1523.92	1518.90
24	1522.15	1526.89	1528.84	1529.65	1529.14	1548.75	1549.56	1554.49	1547.00	1536.48	1523.65	1518.86
25	1521.60	1527.93	1532.10	1529.56	1530.15	1548.81	1549.74	1554.40	1547.73	1536.13	1523.47	1518.55
26	1520.92	1525.73	1531.20	1529.48	1531.38	1548.84	1550.03	1554.28	1546.38	1535.78	1523.22	1518.76
27	1520.17	1526.71	1530.73	1529.12	1530.55	1548.40	1550.55	1554.32	1545.86	1535.37	1522.98	1518.56
28	1519.63	1527.08	1529.33	1528.97	1528.47	1548.37	1551.20	1554.27	1544.98	1534.30	1522.82	1518.54
29	1518.69	1527.10	1527.80	1528.63	---	1547.80	1551.99	1554.11	1544.04	1533.39	1522.44	1518.40
30	1517.10	1527.10	1526.27	1528.58	---	1547.44	1552.66	1553.86	1543.07	1532.68	1522.18	1518.04
31	1516.77	---	1537.53	1528.62	---	1547.07	---	1553.60	---	1532.05	1521.82	---
MEAN	1525.47	1524.23	1532.96	1527.58	1533.84	1545.40	1548.03	1554.24	1549.58	1537.97	1526.38	1520.30
MAX	1539.92	1529.27	1540.31	1530.10	1546.63	1549.88	1552.66	1554.81	1553.29	1542.35	1531.55	1521.66
MIN	1516.77	1515.17	1526.03	1521.55	1526.76	1528.40	1542.76	1553.38	1543.07	1532.05	1521.82	1518.04

WTR YR 1979 MEAN 1535.51 MAX 1554.81 MIN 1515.17

12116100 CANYON CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°25'11", long 121°45'55", in NW¼SE¼ sec.3, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 400 ft (122 m) upstream from mouth and 0.8 mi (1.3 km) east of Cedar Falls.

DRAINAGE AREA.--0.19 mi² (0.49 km²).

PERIOD OF RECORD.--May 1945 to current year. Prior to October 1960 published in WSP 1932.

GAGE.--Water-stage recorder and wooden control. Altitude of gage is 1,040 ft (317 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station. Flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--34 years, 15.9 ft³/s (0.450 m³/s), 11,520 acre-ft/yr (14.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 131 ft³/s (3.71 m³/s) Dec. 7, [redacted] gage height, 2.22 ft (0.677 m); minimum, 0.3 ft³/s (0.008 m³/s) for many days during 1953-55, 1958 and 1961 water years, Oct. 28, 29, 1966, and Nov. 27, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 34 ft³/s (0.963 m³/s) May 25, gage height, 1.40 ft (0.427 m); minimum, 1.3 ft³/s (0.037 m³/s), Sept. 27, 28, 29, 30; minimum gage height, 0.69 ft (0.210 m) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	3.9	3.0	4.5	2.5	5.7	17	19	33	17	8.8	3.1
2	2.1	3.8	2.9	4.5	2.5	5.4	17	20	32	17	8.5	3.1
3	2.5	3.7	2.9	4.4	2.5	5.4	17	22	32	16	8.5	3.1
4	2.7	3.7	2.9	4.3	2.5	5.4	16	23	31	16	8.1	2.9
5	2.7	3.6	2.9	4.3	2.7	5.4	16	24	30	15	7.7	2.9
6	2.7	3.5	2.9	4.2	3.1	5.4	16	25	30	15	7.7	2.7
7	2.7	3.3	2.9	4.1	3.4	5.4	15	26	29	14	7.4	2.7
8	2.8	3.3	2.9	4.0	2.7	5.0	15	27	28	13	7.4	2.5
9	3.6	3.3	2.9	3.9	3.1	5.4	15	28	28	13	7.0	2.5
10	3.9	3.1	3.0	3.9	3.1	5.7	15	29	27	13	6.7	2.3
11	4.0	3.1	3.3	3.7	2.9	6.3	15	30	27	12	6.7	2.3
12	4.1	3.1	3.3	3.7	3.4	7.4	15	30	26	12	6.3	2.1
13	4.2	3.1	3.5	3.6	3.1	8.1	15	30	26	12	6.3	2.1
14	4.3	3.0	3.7	3.5	2.9	9.2	15	30	25	12	6.0	2.1
15	4.3	2.9	3.7	3.5	2.9	11	15	30	25	11	5.7	2.1
16	4.3	2.9	3.9	3.5	3.1	11	15	31	24	11	5.4	2.1
17	4.3	2.9	3.9	3.4	3.4	12	15	30	24	11	5.4	1.9
18	4.3	2.9	4.1	3.3	3.9	13	16	31	24	11	5.0	1.9
19	4.3	2.9	4.1	3.3	4.1	14	16	32	23	11	4.7	1.8
20	4.3	2.9	4.1	3.3	4.4	15	16	32	23	11	4.7	1.8
21	4.3	2.9	4.1	3.3	4.7	15	16	32	22	11	4.4	1.7
22	4.3	2.9	4.4	2.9	5.0	16	17	32	21	11	4.4	1.6
23	4.3	2.9	4.5	2.7	5.4	16	17	33	21	10	4.1	1.6
24	4.1	2.9	4.5	2.7	6.3	16	17	33	20	10	4.1	1.5
25	4.1	2.9	4.5	2.7	6.7	17	17	33	19	10	4.1	1.5
26	4.1	2.9	4.5	2.7	6.3	17	18	33	19	9.6	3.9	1.5
27	4.1	2.9	4.5	2.7	6.0	17	18	33	18	9.6	3.6	1.4
28	4.1	2.9	4.5	2.7	5.7	17	18	33	18	9.6	3.6	1.3
29	4.1	2.9	4.5	2.7	---	17	18	33	18	9.2	3.4	1.3
30	4.1	2.9	4.5	2.7	---	17	19	33	17	9.2	3.4	1.3
31	4.0	---	4.5	2.7	---	17	---	33	---	8.8	3.4	---
TOTAL	115.5	93.9	115.8	107.4	108.3	343.2	487	910	740	371.0	176.4	62.7
MEAN	3.73	3.13	3.74	3.46	3.87	11.1	16.2	29.4	24.7	12.0	5.69	2.09
MAX	4.3	3.9	4.5	4.5	6.7	17	19	33	33	17	8.8	3.1
MIN	1.8	2.9	2.9	2.7	2.5	5.0	15	19	17	8.8	3.4	1.3
AC-FT	229	186	230	213	215	681	966	1800	1470	736	350	124

CAL YR 1978 TOTAL 2409.64 MEAN 6.60 MAX 24 MIN .36 AC-FT 4780
WTR YR 1979 TOTAL 3631.20 MEAN 9.95 MAX 33 MIN 1.3 AC-FT 7200

12116500 CEDAR RIVER AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'02", long 121°47'27", in SW¼SE¼ sec.4, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on right bank 0.5 mi (0.8 km) downstream from Seattle municipal powerplant at Cedar Falls, 4.0 mi (6.4 km) downstream from Chester Morse Lake, and at mile 33.2 (53.4 km).

DRAINAGE AREA.--84.2 mi^2 (218.1 km^2).

PERIOD OF RECORD.--April 1914 to current year.

REVISED RECORDS.--WSP 722: 1930. WSP 1386: 1934(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 902.1 ft (275.0 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. All artificially diverted water returned to river above station. Regulation by Chester Morse Lake for power.

AVERAGE DISCHARGE.--65 years, 323 ft^3/s (9.147 m^3/s), 234,000 acre-ft/yr (289 hm^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,860 ft^3/s (194 m^3/s) Dec. 3, 1975, gage height, 11.68 ft (3.560 m); no flow for part of Nov. 25, 1917, Aug. 18, 1923; minimum daily, 0.5 ft^3/s (0.014 m^3/s) Oct. 6, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 968 ft^3/s (27.4 m^3/s) May 18, gage height, 7.24 ft (2.207 m); minimum, 27 ft^3/s (0.765 m^3/s) Sept. 25, gage height, 4.72 (1.439 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	131	219	479	613	175	333	231	174	386	179	76	69
2	168	191	371	516	205	276	478	171	386	173	77	68
3	225	189	271	170	171	240	338	340	386	175	78	71
4	227	215	566	82	170	226	454	636	386	173	79	72
5	226	209	674	81	166	454	285	676	382	175	77	67
6	226	202	653	80	173	581	186	679	374	133	77	67
7	231	200	378	80	182	710	319	677	386	104	76	67
8	228	203	577	80	250	688	517	674	310	98	77	68
9	234	204	513	80	327	671	494	672	282	101	75	69
10	234	201	390	81	523	508	233	673	278	103	74	69
11	237	200	498	81	673	220	232	520	338	101	70	69
12	231	197	498	186	686	512	191	338	378	90	71	67
13	231	285	511	221	689	526	219	338	289	87	71	67
14	231	278	496	220	677	543	126	317	362	77	75	71
15	233	207	494	289	666	370	123	288	360	73	76	73
16	239	204	241	242	658	582	302	170	360	79	76	74
17	235	213	238	277	609	533	151	413	360	76	76	74
18	226	207	465	237	646	240	127	622	359	75	77	72
19	228	234	427	211	560	310	128	539	360	76	78	73
20	229	334	397	227	415	272	119	282	357	75	76	74
21	228	358	300	247	439	340	117	415	283	76	76	73
22	229	306	317	230	394	270	119	380	206	81	77	73
23	228	228	366	231	475	224	119	560	174	81	78	73
24	228	225	342	229	280	225	116	545	171	79	76	74
25	229	343	510	224	244	227	115	480	168	79	74	58
26	228	234	525	194	301	503	116	412	167	81	74	73
27	223	262	457	155	495	297	130	390	171	79	74	70
28	219	270	482	159	385	497	129	394	168	79	74	71
29	240	283	449	156	---	494	128	403	170	78	76	72
30	222	373	294	152	---	470	131	386	172	77	75	71
31	220	---	496	175	---	426	---	386	---	77	75	---
TOTAL	6944	7274	13675	6206	11634	12768	6473	13950	8929	3090	2341	2109
MEAN	224	242	441	200	416	412	216	450	298	99.7	75.5	70.3
MAX	240	373	674	613	689	710	517	679	386	179	79	74
MIN	131	189	238	80	166	220	115	170	167	73	70	58
AC-FT	13770	14430	27120	12310	23080	25330	12840	27670	17710	6130	4640	4180

CAL YR 1978 TOTAL 83918 MEAN 230 MAX 714 MIN 36 AC-FT 166500
WTR YR 1979 TOTAL 95393 MEAN 261 MAX 710 MIN 58 AC-FT 189200

12117000 TAYLOR CREEK NEAR SELLECK, WA

LOCATION.--Lat 47°23'12", long 121°50'42", in NW¼NW¼ sec.19, T.22 N., R.8 E., King County, Hydrologic Unit 17110012, Snoqualmie National Forest, on left bank 0.6 mi (1.0 km) upstream from mouth and 1.3 mi (2.1 km) northeast of Selleck.

DRAINAGE AREA.--17.2 mi^2 (44.5 km^2).

PERIOD OF RECORD.--June to October 1945, August 1956 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 940 ft (287 m), from topographic map. June to October 1945 on right bank 350 ft (107 km) downstream at different datum.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--23 years, 102 ft^3/s (2.889 m^3/s), 80.53 in/yr (2,045 mm/yr), 73,900 acre-ft/yr (91.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,730 ft^3/s (77.3 m^3/s) Jan. 29, 1965, gage height, 5.78 ft (1.762 m) from rating curve extended above 1,100 ft^3/s (31.2 m^3/s), on basis of slope-area measurement of peak flow; minimum, 16 ft^3/s (0.45 m^3/s) part or all of each day Oct. 2-7, 1958 and Sept. 25-27, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 602 ft^3/s (17.0 m^3/s) Feb. 6, gage height, 3.87 ft (1.180 m); minimum, 16 ft^3/s (0.45 m^3/s) Sept. 25, 26, 27, gage height, 1.76 ft (0.536 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	33	245	63	52	140	83	105	50	65	23	21
2	51	38	163	59	50	125	89	103	49	50	23	32
3	49	91	181	56	54	123	84	100	47	39	23	34
4	47	129	268	54	63	197	145	111	46	37	23	27
5	45	78	176	51	123	284	156	127	52	35	22	22
6	44	63	140	49	263	323	134	127	58	35	22	21
7	43	75	119	48	298	334	119	115	49	34	21	20
8	42	127	107	46	197	251	115	111	45	33	21	21
9	40	87	107	45	270	206	113	105	44	35	21	39
10	43	73	107	58	263	176	113	98	43	44	21	30
11	40	66	178	70	254	159	121	93	42	40	21	23
12	39	60	140	72	298	151	127	89	40	42	21	21
13	38	56	121	66	281	145	181	86	40	36	21	19
14	37	52	154	63	218	136	163	84	39	33	21	19
15	36	51	129	62	178	149	142	81	39	32	21	18
16	35	98	119	60	151	147	129	84	39	30	22	18
17	35	151	111	59	136	137	123	79	39	30	22	18
18	34	117	103	58	134	127	115	76	39	29	22	18
19	34	94	94	59	121	121	109	73	47	29	21	17
20	40	81	91	100	113	115	103	70	42	28	21	17
21	37	75	93	166	107	113	100	67	38	28	21	17
22	34	69	131	102	102	109	98	66	37	28	21	17
23	35	65	121	87	102	105	100	65	36	27	21	17
24	60	62	159	79	145	103	100	63	35	26	20	17
25	39	59	131	73	186	102	100	60	34	25	19	17
26	37	56	117	70	218	98	102	60	32	25	19	16
27	35	67	109	67	200	94	105	60	32	24	19	17
28	36	100	98	65	166	93	109	60	31	24	19	18
29	39	96	86	62	---	89	107	56	31	24	19	17
30	37	239	73	59	---	86	105	54	40	24	19	17
31	35	---	66	55	---	84	---	52	---	23	21	---
TOTAL	1251	2508	4029	2083	4743	4622	3490	2580	1235	1014	651	625
MEAN	40.4	83.6	130	67.2	169	149	116	83.2	41.2	32.7	21.0	20.8
MAX	60	239	260	166	298	334	181	127	58	65	23	39
MIN	34	33	66	45	50	84	83	52	31	23	19	16
CFSM	2.35	4.86	7.56	3.91	9.83	8.66	6.74	4.84	2.40	1.90	1.22	1.21
IN.	2.71	5.42	8.71	4.50	10.26	10.00	7.55	5.58	2.67	2.19	1.41	1.35
AC-FT	2480	4970	7990	4130	9410	9170	6920	5120	2450	2010	1290	1240

CAL YR 1978 TOTAL 28386 MEAN 77.8 MAX 260 MIN 25 CFSM 4.52 IN 61.39 AC-FT 56300
WTR YR 1979 TOTAL 28831 MEAN 79.0 MAX 334 MIN 16 CFSM 4.59 IN 62.35 AC-FT 57190

12117490 CEDAR RIVER ABOVE ROCK CREEK NEAR LANDSBURG, WA

LOCATION.--Lat 47°23'28", long 121°55'08", in NW¼SE¼ sec.16, T.22 N., R.7 E., King County, Hydrologic Unit 17110012, at Trude Road bridge, 3.8 mi (2.9 km) upstream from gaging station (12117500) and 2.6 mi (4.2 km) northeast of Landburg.

DRAINAGE AREA.--116 mi² (300 km²).

PERIOD OF RECORD.--Water year 1973, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM COBALT UNITS)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978 23...	1040	419	55	7.5	9.1	5	1.0	11.2	.10
NOV 13...	1100	804	53	7.3	5.2	10	4.0	12.8	.15
DEC 18...	1155	675	51	7.4	5.3	15	2.0	12.5	.21
JAN , 1979 09...	1050	342	63	7.6	5.3	0	2.0	12.8	.19
FEB 06...	1145	525	52	7.6	5.0	10	4.0	12.5	.24
MAR 05...	1115	1110	43	7.4	5.3	25	4.0	12.7	.24
APR 09...	1040	1070	41	7.5	6.1	10	1.0	12.5	.14
MAY 14...	1050	717	51	7.2	9.3	15	1.0	11.5	.11
JUN 25...	1040	461	58	7.6	11.4	5	2.0	10.6	.15
JUL 16...	1035	339	65	7.7	12.2	5	2.0	10.7	.16
AUG 27...	1025	284	67	7.7	11.7	10	1.0	10.5	.14
SEP 24...	1110	255	65	7.4	10.2	15	1.0	11.0	.15

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1978 23...	.01	.26	.27	.37	1.6	.010	.01	.03
NOV 13...	.01	.44	.45	.60	2.7	.040	.00	.00
DEC 18...	.01	.34	.35	.56	2.5	.020	.02	.06
JAN , 1979 09...	.01	.14	.15	.34	1.5	.010	.00	.00
FEB 06...	.01	.21	.22	.46	2.0	.000	.00	.00
MAR 05...	.01	.16	.17	.41	1.8	.020	.00	.00
APR 09...	.01	.17	.18	.32	1.4	.010	.02	.06
MAY 14...	.01	.01	.02	.13	.58	.010	.00	.00
JUN 25...	.02	.00	.00	.15	.66	.020	.03	.09
JUL 16...	.06	.00	.04	.20	.89	.010	.01	.03
AUG 27...	.04	.77	.81	.95	4.2	.010	.01	.03
SEP 24...	.01	.25	.26	.41	1.8	.000	.00	.00

12117500 CEDAR RIVER NEAR LANDSBURG, WA

LOCATION.--Lat 47°23'38", long 121°57'12", on west line NW¼SW¼ sec.17, T.22 N., R.7 E., King County, Hydrologic Unit 17110012, on left bank 1.8 mi (2.9 km) upstream from intake of Seattle water-supply system near Landsburg, 4.0 mi (6.4 km) east of Maple Valley, 5.9 mi (9.5 km) downstream from Taylor Creek, and at mile 23.4 (37.7 km).

DRAINAGE AREA.--121 mi² (313 km²) excludes Walsh Lake diversion which enters Cedar River at mile 19.5 (31.4 km), and excludes 1.9 mi² (4.9 km²) of Walsh Lake drainage in Cedar River basin normally diverted into Issaquah Creek.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1895 to current year (prior to October 1948, flow of Rock Creek included). Monthly discharge only for some periods, published in WSP 1316. Published as "near Seattle" 1895-98, "near Maple Valley" 1902, and as "near Ravensdale" 1898-1901, 1903-12.

REVISED RECORDS.--WSP 313: 1895-98, 1902-9. WSP 1286: 1912. WSP 1316: 1896-98(M), 1902-11(M). WSP 1736: 1960. WSP 1932: 1947, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 565.9 ft (172.49 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1898 nonrecording gage at site 2.2 mi (3.5 km) downstream at different datum. Mar. 24, 1901, to May 15, 1913, nonrecording gage at site 2 mi (3.2 km) downstream at datum 535.84 ft (163.324 m) National Geodetic Vertical Datum of 1929 (levels by city of Seattle). Apr. 30, 1914, to Oct. 22, 1928, water-stage recorder 0.2 mi (0.3 km) downstream at different datum.

REMARKS.--Water-discharge records excellent. All diversions except Rock Creek returned to river above station. Rock Creek, a tributary which entered naturally just above station prior to 1932, is diverted during summer months to enter river at a point about 3.9 mi (6.3 km) below station. Some regulation by Chester Morse Lake and Masonry Dam, 12.2 mi (19.6 km) upstream.

AVERAGE DISCHARGE.--84 years, 698 ft³/s (19.77 m³/s) 505,700 acre-ft/yr (624 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft³/s (402 m³/s) Nov. 19, 1911, gage height, 10.0 ft (3.05 m), from graph based on gage readings, site and datum then in use, by computation of peak flow over dam, peak caused by failure of flashboards at Chester Morse Lake; minimum observed, 83 ft³/s (2.35 m³/s) Sept. 19, 1898.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,590 ft³/s (45.03 m³/s) Mar. 7, gage height, 3.14 ft (0.957 m); minimum, 212 ft³/s (6.00 m³/s) Sept. 25, gage height, 0.91 ft (0.277 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	354	405	1170	909	433	803	604	537	789	520	310	280
2	370	390	801	905	453	719	846	545	705	490	310	298
3	379	478	708	745	417	663	704	677	702	467	310	308
4	443	579	1140	343	424	756	904	1020	698	458	311	298
5	442	486	1160	341	525	1120	764	1130	708	458	307	280
6	435	448	1080	346	752	1300	618	1140	701	421	307	274
7	437	448	745	347	880	1480	672	1120	707	378	305	271
8	434	536	929	348	717	1330	923	1120	632	368	304	274
9	434	483	875	339	958	1240	936	1110	581	370	304	291
10	442	457	745	351	1170	1030	658	1100	575	387	298	284
11	436	443	976	356	1340	749	670	967	621	381	291	274
12	432	432	892	435	1460	943	621	725	682	366	291	267
13	429	512	893	509	1420	976	712	717	596	357	291	261
14	428	513	926	498	1290	994	599	696	672	341	298	264
15	428	452	878	523	1210	849	573	659	671	333	298	267
16	430	507	610	530	1160	1020	731	533	672	334	301	264
17	431	593	580	547	1080	974	582	749	671	330	298	264
18	412	550	755	499	1110	703	535	995	670	328	301	261
19	413	536	707	488	1040	715	529	955	685	326	301	261
20	429	624	721	549	832	666	508	635	674	323	298	261
21	426	632	623	733	847	728	498	757	606	322	291	261
22	419	574	701	593	785	653	496	730	514	327	298	255
23	419	483	729	560	883	596	493	889	467	327	291	255
24	460	476	744	545	720	593	487	927	459	324	287	251
25	395	589	838	528	761	590	484	832	453	321	284	239
26	423	479	894	499	894	833	484	766	448	322	284	248
27	418	514	838	442	1080	692	499	733	448	319	284	248
28	403	580	826	437	894	807	501	735	448	317	284	248
29	425	574	765	433	---	910	499	740	445	317	284	248
30	415	858	560	422	---	799	497	718	463	314	284	248
31	403	---	756	437	---	786	---	710	---	311	284	---
TOTAL	13044	15631	25565	15529	25535	27017	18627	25667	18083	11257	9189	8003
MEAN	421	521	825	501	912	872	621	828	603	363	296	267
MAX	460	858	1170	909	1460	1480	936	1140	709	520	311	308
MIN	354	390	560	339	417	590	484	533	445	311	284	239
AC-FT	25870	31000	50710	30800	50650	53590	36950	50910	35870	22330	18230	15870

CAL YR 1978 TOTAL 199055 MEAN 545 MAX 1210 MIN 245 AC-FT 394800
WTR YR 1979 TOTAL 213147 MEAN 584 MAX 1480 MIN 239 AC-FT 422800

12117500 CEDAR RIVER NEAR LANDSBURG, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1953 to current year.

INSTRUMENTATION.--Temperature recorder since August 1953.

REMARKS.--Records represent water temperature within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 19.5°C July 27, 28, 1960, July 13, 1961; minimum, 1.0°C on Dec. 31, 1978.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 15.5°C July 16-20; minimum, 1.0°C Dec. 31.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	10.5	10.5	8.5	7.5	8.0	6.0	5.5	5.5	3.0	2.0	2.0
2	11.5	9.5	9.5	8.5	7.5	8.0	6.0	5.5	6.0	3.0	1.5	2.5
3	11.5	9.5	10.5	9.0	8.5	9.0	6.5	5.5	6.5	4.5	2.5	3.0
4	11.5	10.0	10.5	9.0	7.5	8.5	6.5	4.5	5.5	4.5	4.0	4.0
5	11.5	10.0	10.5	8.0	7.0	7.5	5.0	4.5	5.0	4.5	4.0	4.0
6	11.5	10.0	11.0	8.5	7.0	8.0	5.0	4.5	4.5	4.5	4.0	4.0
7	11.5	11.0	11.0	9.0	8.0	8.5	5.0	4.0	4.5	4.5	4.0	4.0
8	12.0	10.5	11.5	9.0	7.5	8.5	4.5	4.0	4.5	4.5	4.0	4.5
9	11.5	10.5	11.0	7.5	6.5	7.0	5.0	4.5	4.5	5.5	4.5	5.0
10	11.5	11.0	11.5	6.5	6.0	6.5	5.5	4.5	5.0	5.0	4.0	5.0
11	12.0	10.5	11.0	6.0	5.5	5.5	5.5	4.5	5.0	5.5	5.0	5.5
12	11.0	9.5	10.5	5.5	5.0	5.5	5.0	4.0	4.5	5.5	3.0	5.0
13	11.0	9.5	10.0	5.5	5.0	5.0	4.5	4.0	4.0	4.0	3.0	4.0
14	11.0	9.0	10.0	6.0	5.0	5.5	5.5	4.0	5.0	4.0	4.0	4.0
15	11.0	9.5	10.0	6.0	5.5	5.5	5.0	4.5	5.0	4.0	2.5	4.0
16	11.0	10.0	10.5	6.5	6.0	6.0	5.0	4.5	5.0	4.5	2.5	3.5
17	11.5	10.5	11.0	6.5	6.0	6.5	5.0	5.0	5.0	3.5	3.0	3.5
18	11.0	9.5	10.5	6.5	6.0	6.5	5.0	4.0	4.5	4.0	3.0	3.5
19	11.0	10.0	10.5	5.5	4.5	5.0	5.0	4.0	4.5	4.5	3.5	4.0
20	10.5	10.0	10.5	5.0	4.0	4.5	5.0	4.0	4.5	4.5	4.0	4.0
21	10.0	9.5	10.0	4.5	4.0	4.0	5.5	4.5	5.5	4.0	3.0	3.5
22	10.5	9.0	9.5	4.5	4.0	4.5	5.5	4.5	5.0	4.0	3.5	3.5
23	10.5	9.0	9.5	5.5	4.5	5.0	5.5	5.0	5.0	4.5	3.5	4.0
24	10.0	9.0	9.5	6.0	5.5	5.5	6.0	4.5	5.5	4.0	3.5	4.0
25	9.5	8.5	9.0	6.0	5.5	5.5	5.0	4.0	4.5	4.0	3.5	4.0
26	9.5	8.0	8.5	6.0	5.5	5.5	4.5	3.5	4.0	4.5	3.5	3.5
27	10.0	9.0	9.5	6.0	5.0	5.5	4.5	3.0	3.5	4.5	4.0	4.5
28	9.5	9.0	9.0	6.5	5.5	6.0	3.5	2.5	3.0	4.5	4.0	4.0
29	9.0	8.5	9.0	6.5	6.0	6.0	3.0	2.0	2.5	4.0	3.5	3.5
30	8.5	8.0	8.0	6.0	5.5	6.0	2.5	2.0	2.5	4.0	3.5	3.5
31	8.5	7.5	8.0	---	---	---	2.0	1.0	1.5	3.5	2.0	3.0
MONTH	12.0	7.5	10.0	9.0	4.0	6.5	6.5	1.0	4.5	5.5	1.5	4.0

12117500 CEDAR RIVER NEAR LANDSBURG, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.5	2.5	3.5	5.0	4.0	4.5	7.0	5.5	6.5	9.0	8.5	8.5
2	4.0	2.5	3.5	6.0	4.0	5.0	6.5	5.0	6.0	9.5	8.5	9.0
3	4.5	3.5	4.0	5.5	5.0	5.5	7.0	5.5	6.0	10.0	8.0	9.0
4	4.5	4.5	4.5	6.0	5.0	5.5	7.0	5.5	6.0	9.5	8.5	9.0
5	4.5	4.0	4.5	5.5	4.5	5.0	8.5	6.0	7.0	9.5	8.5	9.0
6	5.0	3.0	4.0	5.5	4.5	5.0	7.5	6.5	7.0	9.5	8.5	9.0
7	4.5	3.5	4.0	5.0	4.0	5.0	8.0	6.5	7.0	9.5	8.5	9.0
8	5.0	4.0	4.5	5.0	4.0	4.5	7.0	6.0	6.5	9.5	8.5	9.0
9	4.5	3.5	4.0	5.0	4.0	4.5	6.5	6.0	6.5	9.5	8.5	9.0
10	4.0	3.0	3.5	6.0	4.0	5.0	7.5	6.0	6.5	9.5	8.5	9.0
11	3.5	3.0	3.0	6.5	4.0	5.5	7.5	6.5	7.0	10.0	8.0	9.0
12	3.5	3.0	3.0	6.0	4.5	5.5	7.5	6.5	7.0	10.5	8.0	9.0
13	3.5	3.0	3.5	6.0	4.5	5.0	7.5	6.5	7.0	11.5	9.0	10.0
14	3.0	2.5	3.0	6.0	4.5	5.5	8.0	6.5	7.0	12.0	8.5	10.0
15	3.0	2.5	3.0	6.5	5.0	6.0	8.0	6.5	7.0	12.0	9.0	10.0
16	3.5	3.0	3.0	5.5	5.0	5.5	7.5	6.5	7.0	10.5	9.0	10.0
17	4.0	3.0	3.5	6.5	5.0	5.5	8.0	6.5	7.5	11.5	9.0	10.0
18	4.0	3.0	3.5	7.5	5.0	6.0	8.5	7.0	7.5	11.0	10.0	10.5
19	4.0	3.0	3.5	7.0	5.5	6.0	8.5	7.0	7.5	12.0	9.5	10.5
20	4.5	3.5	4.0	7.5	5.5	6.5	9.5	7.0	8.0	12.5	9.0	10.5
21	4.0	3.5	4.0	6.5	5.5	6.0	10.0	7.0	8.5	12.5	9.5	11.0
22	4.5	4.0	4.0	8.0	5.5	6.5	10.0	7.0	8.5	12.5	10.0	11.0
23	4.0	3.0	3.5	8.0	6.0	7.0	10.5	8.0	9.0	12.0	10.5	11.0
24	4.5	4.0	4.5	8.0	6.0	7.0	9.5	8.0	8.5	12.5	11.0	11.5
25	5.5	4.0	5.0	7.5	6.5	7.0	10.5	7.5	9.0	13.5	10.5	12.0
26	5.5	4.0	5.0	7.0	6.0	6.5	11.5	7.5	9.5	12.0	10.5	11.5
27	5.0	3.5	4.0	12.5	6.0	7.0	11.0	8.0	9.5	11.5	10.0	11.0
28	5.0	3.5	4.5	7.0	5.5	6.5	10.5	8.5	9.5	11.5	10.0	10.5
29	---	---	---	6.5	5.5	6.0	10.0	8.5	9.0	11.5	10.0	10.5
30	---	---	---	6.5	5.5	6.0	11.0	8.0	9.5	13.5	10.0	11.5
31	---	---	---	6.5	5.5	6.0	---	---	---	14.0	10.5	12.0
MONTH	5.5	2.5	4.0	12.5	4.0	5.5	11.5	5.0	7.5	14.0	8.0	10.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.0	11.0	12.0	11.5	11.0	11.5	13.5	12.0	12.5	12.0	11.5	12.0
2	14.5	11.0	12.5	13.5	11.0	12.0	14.0	11.5	12.5	12.0	11.5	11.5
3	14.0	11.5	12.5	14.5	11.0	12.5	13.0	11.5	12.0	12.0	11.0	11.5
4	13.0	11.5	12.0	13.5	11.5	12.5	14.5	10.5	12.5	12.5	11.0	12.0
5	12.5	12.0	12.0	14.5	12.0	13.0	13.0	11.5	12.0	12.0	11.0	11.5
6	12.5	11.5	12.0	14.0	11.5	12.5	14.0	11.0	12.5	12.5	11.0	11.5
7	14.0	11.0	12.0	14.0	11.0	12.5	14.5	11.0	12.5	13.0	11.0	12.0
8	14.0	11.0	12.5	14.5	11.5	13.0	14.5	11.0	12.5	12.5	11.5	12.0
9	14.5	10.5	12.5	14.5	11.5	13.0	14.5	11.0	13.0	12.0	11.0	11.5
10	14.5	11.0	12.5	13.0	11.5	12.5	14.5	11.0	13.0	12.0	10.5	11.5
11	14.5	11.0	12.5	13.0	11.5	12.0	14.0	11.0	12.5	12.0	10.0	11.0
12	14.0	11.5	12.5	12.5	11.0	11.5	14.0	11.0	12.5	12.5	10.5	11.5
13	13.0	11.5	12.0	13.5	10.5	12.0	13.5	11.0	12.5	12.5	10.5	11.5
14	13.5	11.5	12.5	14.5	10.5	12.5	12.5	11.5	12.0	13.5	11.5	12.5
15	13.5	12.0	12.5	15.0	11.0	13.0	14.5	11.5	13.0	13.0	11.5	12.0
16	13.5	12.0	12.5	15.5	11.0	13.5	13.5	11.5	12.5	12.5	11.5	12.0
17	13.0	12.0	12.5	15.5	11.5	13.5	13.0	12.0	12.5	12.5	10.5	11.5
18	12.5	12.0	12.0	15.5	11.5	13.5	12.5	11.5	12.0	12.5	10.5	11.5
19	12.5	12.0	12.0	15.5	11.5	13.5	12.5	11.5	12.0	12.5	11.0	11.5
20	13.0	12.0	12.5	15.5	11.5	13.5	13.0	11.5	12.5	12.0	11.5	11.5
21	13.0	11.5	12.0	13.5	12.0	12.5	12.5	11.5	12.0	12.5	11.0	11.5
22	13.0	11.0	12.0	14.5	11.0	12.5	13.0	11.5	12.5	12.5	11.0	11.5
23	14.5	10.5	12.0	14.0	11.0	12.5	13.5	11.5	12.0	12.0	10.0	11.0
24	15.0	10.5	12.5	14.0	11.5	12.5	13.5	11.0	12.5	12.0	10.0	11.0
25	15.0	11.0	12.5	14.5	11.5	12.5	14.0	11.0	12.5	12.0	10.5	11.0
26	14.5	11.0	12.5	15.0	11.5	13.0	14.0	11.5	12.5	12.0	11.0	11.5
27	14.5	11.0	12.5	14.5	11.5	12.5	12.5	11.5	12.0	12.0	11.0	11.5
28	15.0	11.5	13.0	12.5	11.5	12.0	13.5	11.5	12.5	11.5	10.5	11.0
29	12.5	11.5	12.0	14.5	11.5	12.5	12.5	11.5	12.0	11.5	10.0	10.5
30	12.5	11.5	12.0	15.0	11.0	13.0	12.0	11.5	12.0	11.5	10.5	11.0
31	---	---	---	15.0	11.5	13.0	13.0	11.5	12.5	---	---	---
MONTH	15.0	10.5	12.5	15.5	10.5	12.5	14.5	10.5	12.5	13.5	10.0	11.5
YEAR	15.5	1.0	8.5									

12119000 CEDAR RIVER AT RENTON, WA

LOCATION.--Lat 47°28'58", long 122°12'08", in SW¼NW¼ sec.17, T.23 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 125 ft (38 m) downstream from bridge on Mill Avenue at Renton and at mile 1.6 (2.6 km).

DRAINAGE AREA.--184 mi^2 (477 km^2), includes 3.67 mi^2 (9.51 km^2) in vicinity of Youngs Lake in Big Soos Creek basin, excludes 1.9 mi^2 (4.9 km^2) from upper Rock Creek, Cedar River basin, normally diverted into Issaquah Creek.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1901 to July 1903 (fragmentary), September 1906 to December 1907 (monthly discharge only), August 1945 to current year.

REVISED RECORDS.--WSP 1316: 1901-2. WSP 1932: Drainage area. WDR WA-75-1: 1972-1974.

GAGE.--Water-stage recorder. Datum of gage is 15.20 ft (4.633 m) National Geodetic Vertical Datum of 1929. Prior to Jan. 1, 1908, nonrecording gages within 1 mi (1.6 km) of present site, at datum 10.67 ft (3.252 m) National Geodetic Vertical Datum of 1929. Aug. 7, 1945, to Aug. 15, 1947, water-stage recorder at site 700 ft (213 m)) upstream at datum 20.13 ft (6.136 m) National Geodetic Vertical Datum of 1929; and Aug. 16, 1947, to Dec. 7, 1950, at datum 19.13 ft (5.831 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good. Flow partly regulated by Chester Morse Lake for operation of powerplant at Cedar Falls 32.1 mi (51.6 km) upstream from gage. An average daily discharge of about 169 ft^3/s (4.79 m^3/s) was diverted during the year at Landsburg by the city of Seattle for municipal use.

AVERAGE DISCHARGE.--34 years (water years, 1946-79), 699 ft^3/s (19.80 m^3/s), 506,400 acre-ft/yr (624 hm^3/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,800 ft^3/s (249 m^3/s), Dec. 4, 1975, gage height, 14.14 ft ft (4.310 m) from outside high-water mark; minimum daily, 30 ft^3/s (0.85 m^3/s) July 1, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,840 ft^3/s (52.1 m^3/s) Feb. 12, gage height, 9.38 ft (2.859 m); minimum daily discharge, 77 ft^3/s (2.18 m^3/s) Aug. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	310	395	1510	535	470	954	578	495	525	360	92	105
2	315	415	1110	547	485	841	609	495	505	319	97	153
3	333	572	930	500	475	750	690	525	505	234	100	219
4	405	626	1290	450	475	876	674	743	495	226	102	205
5	333	490	1380	425	535	1230	771	855	515	230	100	198
6	346	450	1230	435	644	1490	550	876	510	205	97	189
7	370	400	876	435	1280	1650	530	914	535	216	92	186
8	365	485	841	435	792	1440	764	1000	495	205	92	195
9	360	435	827	430	938	1300	820	994	495	195	90	202
10	370	405	715	480	1340	1070	694	962	515	192	87	205
11	370	395	883	450	1480	890	632	883	510	183	82	183
12	365	385	869	475	1690	820	584	620	500	205	82	177
13	365	430	914	530	1690	962	656	596	485	226	77	180
14	365	510	906	470	1470	970	584	584	495	189	95	177
15	370	425	869	475	1310	906	550	545	495	177	105	180
16	370	470	708	525	1230	946	596	596	485	168	95	180
17	370	530	566	505	1150	970	626	602	475	126	102	177
18	365	520	608	460	1150	806	510	680	465	114	111	174
19	380	495	757	460	1110	701	495	729	465	108	120	174
20	380	572	708	505	869	650	490	535	440	102	114	177
21	380	560	608	676	855	694	495	566	415	102	114	180
22	375	555	614	608	806	614	500	555	415	108	117	171
23	385	450	626	535	914	510	495	572	385	108	114	174
24	430	455	750	530	869	505	505	729	370	92	108	174
25	400	455	674	510	994	500	505	584	346	90	102	174
26	395	530	620	495	1040	608	495	608	333	90	114	174
27	395	495	771	480	1250	694	500	555	324	95	165	174
28	400	572	764	470	1110	584	495	590	324	95	168	168
29	400	566	701	465	---	813	500	632	310	100	120	165
30	395	869	572	455	---	662	495	572	310	92	105	168
31	395	---	560	465	---	687	---	515	---	90	105	---
TOTAL	11557	14918	25957	15416	28421	27093	17388	20707	13442	5042	3264	5358
MEAN	373	497	837	497	1015	874	580	668	448	163	105	179
MAX	430	869	1510	876	1690	1650	820	1000	535	360	168	219
MIN	310	385	560	425	470	500	490	495	310	90	77	105
AC-FT	22920	29590	51490	30580	56370	53740	34490	41070	26660	10000	6470	10630

CAL YR 1978 TOTAL 179984 MEAN 493 MAX 1510 MIN 78 AC-FT 357000
WTR YR 1979 TOTAL 188563 MEAN 517 MAX 1690 MIN 77 AC-FT 374000

12119000 CEDAR RIVER AT RENTON, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-71, March 1978 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: August 1965 to February 1967, March 1978 to current year.

INSTRUMENTATION.--Temperature recorder for period of daily record.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 24.0°C Aug. 8, 1978; minimum, 0.0°C Dec. 30, 1978 to Jan. 1, 1979.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 23.0°C July 18-20; minimum, 0.0°C Dec. 30 to Jan. 1.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.5	11.0	12.0	---	---	---	7.0	6.0	6.5	1.5	.0	1.0
2	13.5	10.0	11.5	---	---	---	7.0	6.5	6.5	2.5	1.5	2.0
3	13.0	10.5	11.5	---	---	---	---	---	---	3.0	1.0	2.0
4	13.5	10.5	12.0	---	---	---	---	---	---	3.5	2.0	2.5
5	14.0	11.5	12.5	---	---	---	5.5	5.0	5.0	3.0	1.5	2.0
6	14.0	11.5	12.5	---	---	---	5.0	4.5	5.0	3.0	1.5	2.0
7	---	---	---	9.5	9.0	9.0	5.0	4.0	4.5	3.0	2.0	2.5
8	---	---	---	9.5	8.0	9.0	5.0	4.0	4.5	4.0	2.5	3.0
9	---	---	---	8.0	6.5	7.5	5.5	5.0	5.0	5.0	3.5	4.5
10	---	---	---	6.5	5.0	6.0	6.0	5.0	5.5	4.5	4.0	4.5
11	---	---	---	6.0	4.0	5.0	6.0	5.0	6.0	5.5	4.5	5.0
12	---	---	---	5.5	3.5	4.5	5.0	4.0	4.5	5.5	5.0	5.5
13	12.0	9.0	10.5	5.5	3.5	4.5	5.0	3.5	4.0	5.0	3.5	4.5
14	12.5	9.5	11.0	5.5	4.0	4.5	6.0	4.5	5.5	4.5	3.5	4.0
15	13.0	11.0	12.0	6.0	4.0	5.0	6.0	4.5	5.0	4.5	4.0	4.5
16	13.0	11.0	11.5	7.5	6.0	7.0	5.5	4.5	5.0	4.5	3.5	4.0
17	12.5	9.0	11.0	7.5	7.0	7.0	5.5	5.0	5.5	4.0	3.5	3.5
18	11.5	8.5	9.5	7.0	5.5	6.5	5.5	5.0	5.5	4.0	2.5	3.0
19	10.5	8.5	10.0	6.0	4.5	5.5	5.0	4.5	4.5	5.0	4.0	4.5
20	9.5	7.5	8.5	5.0	4.0	4.5	5.5	4.5	5.0	6.0	5.0	5.5
21	9.0	7.0	7.5	4.5	3.5	4.0	6.0	5.0	5.5	5.5	3.5	4.5
22	9.0	6.5	7.5	4.5	3.5	4.0	6.0	5.5	6.0	4.0	3.0	3.5
23	9.0	7.0	8.0	5.5	4.0	4.5	6.5	5.5	6.0	5.0	3.5	4.0
24	9.5	9.0	9.0	6.0	5.5	5.5	7.0	4.0	5.5	5.0	3.5	4.0
25	10.0	8.5	9.5	6.5	5.5	6.0	5.0	3.5	4.0	4.5	3.5	3.5
26	8.5	7.0	8.0	7.0	5.0	6.0	4.5	3.5	4.0	4.0	3.0	3.5
27	---	---	---	6.0	4.5	5.5	4.0	2.0	3.0	5.0	4.0	4.5
28	---	---	---	7.0	6.0	6.5	2.5	1.0	1.5	4.5	3.0	3.5
29	---	---	---	7.0	7.0	7.0	2.0	.5	1.0	4.0	2.0	3.0
30	---	---	---	7.0	6.0	6.5	1.5	.0	1.0	3.5	2.0	2.5
31	---	---	---	---	---	---	1.0	.0	.5	3.0	1.5	2.5
MONTH	14.0	6.5	10.5	9.5	3.5	6.0	7.0	.0	4.5	6.0	.0	3.5

12119000 CEDAR RIVER AT RENTON, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.5	1.5	2.5	6.0	4.5	5.0	7.5	5.5	6.5	11.0	9.5	10.5
2	3.5	1.5	2.5	6.5	4.0	5.0	8.0	6.0	7.0	11.5	9.0	10.0
3	4.0	3.0	3.5	6.0	4.5	5.5	7.0	5.5	6.0	12.0	9.0	10.5
4	5.0	4.0	4.5	7.0	6.0	6.5	7.5	6.5	7.0	11.0	9.5	10.0
5	5.5	5.0	5.0	7.0	6.0	6.5	10.0	6.5	7.5	10.5	9.0	10.0
6	6.0	4.5	5.0	7.5	5.5	6.5	8.0	7.0	7.5	11.0	9.0	10.0
7	5.0	3.5	4.5	7.0	5.0	6.0	10.5	6.5	8.5	12.0	9.0	10.0
8	6.0	4.5	5.0	6.5	4.0	5.0	8.5	6.5	7.5	11.5	9.0	10.0
9	5.5	4.5	5.0	7.0	4.0	5.5	8.0	6.5	7.0	11.0	9.0	9.5
10	5.0	4.0	4.5	8.0	4.5	6.0	8.5	6.0	7.5	11.0	9.0	10.0
11	4.5	4.0	4.5	7.0	5.0	6.0	9.0	7.0	7.5	12.0	8.5	10.0
12	4.5	4.0	4.5	9.0	5.5	7.0	8.0	6.5	7.5	12.5	9.0	10.5
13	5.0	4.0	4.5	8.0	4.5	6.0	9.0	6.5	7.5	14.0	10.0	11.5
14	4.0	3.5	3.5	8.0	5.0	6.5	9.5	6.0	7.5	14.5	9.5	12.0
15	4.0	3.0	3.5	7.5	6.0	6.5	8.5	7.0	7.5	14.5	10.0	12.0
16	4.5	3.5	3.5	8.0	5.5	6.5	8.5	7.5	8.0	13.5	10.5	12.0
17	4.5	3.5	4.0	8.0	5.5	6.5	10.0	7.0	8.0	14.0	10.0	12.0
18	5.0	4.0	4.5	8.5	5.5	6.5	10.5	7.0	8.5	13.5	11.0	12.0
19	5.0	4.0	4.0	9.0	5.5	7.0	10.5	7.0	8.5	14.5	9.5	12.0
20	5.5	3.5	4.5	9.5	5.5	7.0	12.0	7.0	9.5	15.5	10.0	12.5
21	5.5	4.0	4.5	9.5	5.5	7.0	12.5	7.5	10.0	15.5	11.0	13.0
22	5.5	3.5	4.5	10.0	5.5	7.5	12.5	8.0	10.5	14.5	11.0	13.0
23	4.5	3.5	4.5	10.0	6.0	8.0	13.0	8.5	11.0	14.5	11.5	13.0
24	5.0	3.5	4.5	10.0	6.5	8.0	11.5	9.0	10.0	15.0	11.5	13.0
25	6.5	5.0	5.5	8.5	7.5	8.0	13.0	8.0	10.5	16.5	11.0	13.5
26	6.0	5.5	6.0	9.5	6.5	7.5	14.0	8.5	11.0	14.5	12.0	13.0
27	6.0	4.0	5.0	8.0	6.5	7.0	14.0	9.5	11.5	13.0	10.5	12.0
28	5.5	3.5	4.5	9.0	6.5	7.5	12.5	10.5	11.5	13.0	10.0	11.5
29	---	---	---	8.0	6.0	7.0	12.0	10.0	11.0	13.5	10.0	11.5
30	---	---	---	8.5	6.0	7.0	13.5	9.0	11.0	15.5	10.0	12.5
31	---	---	---	8.0	5.5	7.0	---	---	---	16.5	11.0	13.5
MONTH	6.5	1.5	4.5	10.0	4.0	6.5	14.0	5.5	8.5	16.5	8.5	11.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.0	12.0	14.5	13.0	11.5	12.5	20.5	16.5	18.0	16.5	15.0	15.5
2	18.0	12.5	15.0	16.0	10.5	13.0	20.0	15.0	17.5	16.0	14.5	15.0
3	17.5	13.0	15.0	18.5	11.5	15.0	18.5	15.0	16.5	16.0	13.0	14.5
4	15.5	13.0	14.0	17.0	13.5	15.5	19.5	13.0	16.5	16.0	13.0	14.5
5	15.0	12.5	13.5	19.5	13.5	16.5	19.5	14.5	17.0	14.5	13.0	14.0
6	13.5	11.5	12.5	19.0	14.0	16.5	19.5	13.5	16.5	16.0	13.0	14.5
7	16.0	10.5	13.0	18.5	14.0	16.5	20.5	13.5	17.0	17.0	13.0	15.0
8	16.5	11.5	13.5	20.0	14.5	17.0	20.0	14.0	17.0	16.5	14.0	15.0
9	17.0	12.0	14.5	19.5	15.0	17.0	20.5	14.0	17.0	16.0	12.5	14.0
10	17.5	12.5	15.0	17.0	14.5	15.5	21.0	14.5	17.5	15.5	11.5	13.5
11	17.0	12.5	14.5	16.5	13.5	15.0	20.5	14.5	17.5	16.0	11.5	14.0
12	16.5	12.5	14.0	16.0	13.5	14.5	20.5	14.0	17.0	16.5	12.0	14.5
13	15.0	12.0	13.5	17.5	12.5	15.0	19.0	15.0	17.0	17.0	12.0	14.5
14	16.0	11.0	13.5	19.5	12.5	16.0	16.5	15.0	15.5	17.5	12.5	15.0
15	15.0	12.0	13.5	21.0	14.0	17.5	20.0	14.0	16.5	16.5	14.0	15.0
16	14.0	12.5	13.5	22.0	15.0	18.5	20.0	15.5	17.5	16.5	14.0	15.0
17	13.5	12.0	12.5	22.5	16.0	19.0	18.5	16.0	17.0	16.5	12.5	14.5
18	13.0	12.0	12.5	23.0	16.0	19.5	16.5	14.5	15.5	16.0	12.5	14.5
19	13.5	12.0	12.5	23.0	16.0	19.5	16.0	14.5	15.5	15.0	13.5	14.5
20	14.5	11.5	13.0	23.0	16.5	19.5	18.0	14.5	16.0	15.0	13.5	14.0
21	16.0	11.5	13.5	19.5	16.0	17.5	16.0	15.0	15.5	16.0	13.5	14.5
22	15.5	11.5	13.5	20.5	14.5	17.0	19.5	14.0	16.5	16.0	12.5	14.0
23	17.5	11.5	14.5	20.0	14.5	17.0	18.0	14.5	16.0	15.0	11.5	13.5
24	18.5	12.5	15.0	19.5	14.5	17.0	19.5	14.0	16.5	15.0	12.0	13.5
25	19.0	13.0	15.5	20.0	14.5	17.0	19.5	14.0	16.5	16.0	12.5	14.0
26	19.0	13.0	16.0	21.5	14.5	18.0	19.5	14.5	17.0	15.5	13.5	14.5
27	18.0	13.5	15.5	19.5	15.0	17.0	17.0	14.5	15.5	15.0	12.5	14.0
28	19.0	13.0	16.0	17.0	14.5	16.0	18.0	14.0	15.5	15.0	12.5	14.0
29	15.5	13.5	14.0	20.5	14.0	17.0	16.5	14.0	15.0	14.0	11.5	13.0
30	14.5	12.5	13.5	21.5	14.5	18.0	15.5	14.5	15.0	15.0	11.5	13.0
31	---	---	---	22.5	15.5	19.0	18.0	14.0	16.0	---	---	---
MONTH	19.0	10.5	14.0	23.0	10.5	17.0	21.0	13.0	16.5	17.5	11.5	14.5
YEAR	23.0	.0	10.0									

12119007 CEDAR RIVER AT LOGAN STREET AT RENTON, WA

LOCATION.--Lat 47°29'09", long 122°12'28", in NE¼NE¼ sec.18, T.23 N., R.5 E., King County, Hydrologic Unit 17110012, at Logan Avenue bridge near mouth, 0.2 mi (0.3 km) downstream from gaging station at Renton and at mile 1.0 (1.6 km).

PERIOD OF RECORD.--Water years 1976 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978 25...	1135	405	76	7.5	9.2	10	2.0
NOV 15...	1230	425	77	7.5	6.7	15	2.0
DEC 20...	1145	645	61	7.4	4.9	15	3.0
JAN , 1979 11...	1100	445	74	7.4	5.4	15	3.0
FEB 08...	1120	799	60	7.2	5.7	15	10
MAR 07...	1050	1720	53	7.0	6.9	65	14
APR 11...	1120	530	70	7.6	8.0	10	8.0
MAY 16...	1130	566	66	7.4	11.4	15	4.0
JUN 27...	1105	328	76	7.8	14.1	10	2.0
JUL 18...	1210	129	95	7.9	19.8	20	2.0
AUG 29...	1145	117	95	8.1	14.8	10	1.0
SEP 26...	1040	168	90	7.9	14.2	10	2.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978 25...	11.6	.27	.09	.010	.01	.03
NOV 15...	12.5	.33	.04	.020	.00	.00
DEC 20...	12.8	.43	.01	.020	.01	.03
JAN , 1979 11...	12.5	.46	.01	.030	.00	.00
FEB 08...	12.5	.81	.03	.020	.00	.00
MAR 07...	12.5	.47	.01	.040	.00	.00
APR 11...	12.0	.34	.03	.010	.00	.00
MAY 16...	11.2	.21	.01	.010	.00	.00
JUN 27...	10.9	.16	.04	.010	.01	.03
JUL 18...	10.1	.22	.03	.010	.01	.03
AUG 29...	11.0	.15	.00	.010	.00	.00
SEP 26...	11.7	.19	.04	.000	.00	.00

12119300 MAY CREEK NEAR ISSAQUAH, WA

LOCATION.--Lat 47°29'53", long 122°05'53", in SW¼NW¼ sec.7, T.23 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank upstream from State Highway 900, 3.6 mi (5.8 km) southwest of Issaquah, and at mile 6.6 (10.6 km).

DRAINAGE AREA.--2.82 mi² (7.30 km²).

PERIOD OF RECORD.--May 1978 to April 30, 1979 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage 325 ft (99.1 m), from topographic map.

REMARKS.--Records fair. Figures of discharge include those for side channel (12119302) entering stream 30 ft (9.14 m) downstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38 ft³/s (1.08 m³/s) Feb. 12, 1979, gage height, 1.80 ft (6.549 m); minimum daily, 0.33 ft³/s (0.009 m³/s) Aug. 29, 30, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period October 1978 to April 1979, 38 ft³/s (1.08 m³/s) on Feb. 12, gage height, 1.80 ft (0.549 m); minimum, 0.62 ft³/s 0.018 m³/s) Oct. 18, 19, 20, gage height, 0.30 ft ft (0.091 m).

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1978 TO APRIL 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	.74	33	2.0	3.1	11	2.1					
2	1.3	1.2	22	2.0	2.8	9.4	2.5					
3	1.2	5.9	15	1.9	2.7	8.5	2.2					
4	1.1	18	20	1.9	2.6	10	2.5					
5	1.1	11	19	1.9	6.5	13	2.5					
6	1.0	6.4	16	1.8	9.3	12	2.3					
7	.93	4.7	12	1.8	13	11	2.2					
8	.92	4.8	10	1.8	12	9.5	2.1					
9	.92	7.6	9.1	1.8	13	8.6	2.4					
10	.96	5.8	8.1	4.4	14	7.5	3.8					
11	.85	4.4	7.8	3.4	15	6.5	3.3					
12	.79	3.9	6.3	3.5	34	5.9	3.8					
13	.74	3.2	5.5	3.2	32	5.2	6.3					
14	.71	2.8	5.7	3.0	22	4.9	5.6					
15	.71	2.6	4.8	3.2	16	5.5	5.2					
16	.71	5.0	4.5	3.1	13	4.9	4.8					
17	.70	7.2	4.1	2.9	11	4.3	4.5					
18	.68	7.9	3.8	2.8	10	4.1	4.0					
19	.67	11	3.4	2.9	8.9	3.7	3.6					
20	.95	9.0	3.4	4.7	7.7	3.6	3.3					
21	.84	7.2	4.1	14	7.7	3.3	3.1					
22	.75	6.1	4.8	11	6.6	3.1	2.9					
23	.81	5.1	4.3	9.9	7.2	2.9	2.7					
24	1.7	4.5	4.1	9.4	9.7	2.8	2.5					
25	1.1	4.0	3.8	7.2	13	2.5	2.4					
26	1.0	3.7	3.5	6.2	14	2.6	2.2					
27	.92	3.9	3.1	5.6	14	2.6	2.0					
28	.95	6.8	2.8	4.9	12	2.5	1.9					
29	.94	6.6	2.4	4.4	---	2.3	1.8					
30	.85	17	2.2	3.8	---	2.2	1.8					
31	.79	---	2.1	3.4	---	2.1	---					
TOTAL	28.99	188.04	250.7	133.8	332.8	178.0	92.3					
MEAN	.94	6.27	8.09	4.32	11.9	5.74	3.08					
MAX	1.7	18	33	14	34	13	6.3					
MIN	.67	.74	2.1	1.8	2.6	2.1	1.8					
CFSM	.33	2.22	2.87	1.53	4.22	2.04	1.09					
IN.	.38	2.48	3.31	1.76	4.39	2.35	1.22					
AC-FT	58	373	497	265	660	353	183					

12119375 MAY CREEK AT RENTON, WA

LOCATION.--Lat 47°31'02", long 122°08'55", in SW¼SE¼ sec.34, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank at downstream side of 143rd Avenue S.E. road crossing (private bridge), 2 mi (3.2 km) northeast of Renton.

DRAINAGE AREA.--7.57 mi^2 (19.6 km^2).

PERIOD OF RECORD.--January 1978 to April 30, 1979 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 300 ft (91.4 m), from topographic map.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 128 ft^3/s (3.62 m^3/s) Feb. 13, 1979, gage height, 2.14 ft (0.652 m); minimum, 0.59 ft^3/s (0.017 m^3/s) Aug. 13, 1978, gage height, 0.45 ft (0.137 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period October 1978 to April 1979, 128 ft^3/s (3.62 m^3/s) Feb. 13; gage height, 2.14 ft (0.652 m); minimum, 2.8 ft^3/s (0.079 m^3/s) Oct. 18, 19, gage height, 0.62 (0.189 m).

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1978 TO APRIL 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	3.5	69	6.2	8.0	30	5.2					
2	4.1	4.5	57	6.1	7.8	26	6.6					
3	3.7	15	39	6.0	7.6	24	6.6					
4	3.5	38	45	5.9	7.5	31	6.9					
5	3.4	28	51	5.8	17	45	7.1					
6	3.2	16	42	5.7	28	41	6.6					
7	3.1	12	32	5.6	50	35	6.3					
8	2.9	12	25	5.5	43	30	6.1					
9	2.9	17	22	5.5	48	26	6.3					
10	3.2	13	20	12	48	22	11					
11	3.1	11	19	11	52	19	9.2					
12	3.1	9.6	16	11	103	17	9.6					
13	3.1	8.6	13	9.6	105	15	17					
14	3.1	7.7	14	8.9	64	13	14					
15	2.9	7.7	13	9.6	42	15	13					
16	2.9	15	12	9.2	32	14	12					
17	2.9	19	11	8.6	28	12	11					
18	2.9	19	11	8.0	23	11	9.9					
19	2.9	28	10	8.3	22	9.9	8.9					
20	3.2	22	9.9	13	19	8.9	8.0					
21	4.1	17	10	41	20	8.3	7.7					
22	3.4	15	12	34	17	7.7	7.1					
23	3.4	13	11	28	18	7.4	6.6					
24	6.8	12	11	29	24	7.1	6.1					
25	4.9	11	9.6	21	39	6.6	5.8					
26	4.1	10	8.9	16	42	6.6	5.2					
27	3.9	11	8.0	14	42	6.3	4.8					
28	3.9	18	7.4	12	35	6.3	4.6					
29	4.1	17	7.0	11	---	5.8	4.5					
30	3.7	34	6.6	9.2	---	5.5	4.2					
31	3.5	---	6.4	8.6	---	5.2	---					
TOTAL	110.4	464.6	628.8	385.3	991.9	517.6	237.9					
MEAN	3.56	15.5	20.3	12.4	35.4	16.7	7.93					
MAX	6.8	38	69	41	105	45	17					
MIN	2.9	3.5	6.4	5.5	7.5	5.2	4.2					
CFSM	.47	2.05	2.68	1.64	4.68	2.21	1.05					
IN.	.54	2.28	3.09	1.89	4.87	2.54	1.17					
AC-FT	219	922	1250	764	1970	1030	472					

12119450 HONEY CREEK NEAR RENTON, WA

LOCATION.--Lat 47°30'48", long 122°10'41", in NE¼NW¼ sec.4, T.23 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank upstream from county road (120th Place S.E.) crossing, 1.1 mi (1.8 km) northeast of Renton.

DRAINAGE AREA.--0.70 mi^2 (1.8 km^2).

PERIOD OF RECORD.--April 1978 to April 1979 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage 200 ft (61 m), from topographic map.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29 ft^3/s (0.821 m^3/s) Feb. 11, 1979, gage height, 1.72 ft (0.524 m); minimum, 0.58 ft^3/s (0.016 m^3/s) part or all of many days during June to August 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period October 1978 to April 1979, 29 ft^3/s (0.821 m^3/s) Feb. 11, gage height, 1.72 ft (0.524 m); minimum daily, 0.62 ft^3/s (0.018 m^3/s) Jan. 7, during period of ice affect.

CORRECTION.--Peak date for period during water year 1978 should be July 26. This date supersedes that published in the report for 1978.

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1978 TO APRIL 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.74	.66	6.4	.79	1.4	4.0	.74					
2	.74	2.9	4.0	.76	1.3	3.3	1.2					
3	.74	5.0	3.6	.73	1.2	3.3	.84					
4	.74	3.8	6.4	.70	1.1	6.1	1.1					
5	.74	1.4	5.3	.68	2.5	6.4	.94					
6	.74	1.1	4.0	.65	5.3	5.6	.94					
7	.71	.94	2.9	.62	5.0	4.3	.84					
8	.69	1.6	2.5	.70	5.0	2.9	1.1					
9	.67	1.8	2.9	.84	5.8	2.5	2.0					
10	.73	1.1	3.1	4.8	6.1	2.1	1.8					
11	.72	.94	3.1	2.0	7.7	1.7	1.4					
12	.71	.84	2.5	1.8	11	1.6	2.0					
13	.70	.77	2.3	1.7	8.8	1.4	2.9					
14	.70	.74	2.7	1.6	6.1	1.3	2.3					
15	.69	1.4	2.1	1.7	5.3	1.8	1.9					
16	.68	2.7	2.1	1.6	4.5	1.3	1.6					
17	.67	3.1	2.3	1.4	4.8	1.2	1.3					
18	.68	4.8	1.7	1.4	4.0	1.2	1.2					
19	.70	4.8	1.4	1.4	3.8	1.1	1.2					
20	.74	2.7	1.6	3.6	3.1	1.1	1.1					
21	.93	2.0	1.6	5.6	3.6	1.1	1.1					
22	.79	1.6	2.5	3.3	2.9	.94	1.1					
23	.77	1.4	1.7	3.6	3.8	.94	1.0					
24	1.5	1.7	1.6	3.3	6.4	.94	.94					
25	1.1	1.8	1.4	2.5	7.5	.94	.89					
26	.93	1.6	1.2	2.1	6.7	.94	.84					
27	.89	5.6	.96	2.0	6.4	.84	.84					
28	.85	4.3	.93	1.8	5.0	.84	.84					
29	.90	3.1	.90	1.7	---	.84	.84					
30	.77	6.8	.84	1.7	---	.84	.84					
31	.70	---	.82	1.6	---	.74	---					
TOTAL	24.36	72.99	77.35	58.67	136.1	64.10	37.63					
MEAN	.79	2.43	2.50	1.89	4.86	2.07	1.25					
MAX	1.5	6.8	6.4	5.6	11	6.4	2.9					
MIN	.67	.66	.82	.62	1.1	.74	.74					
CFSM	1.13	3.47	3.57	2.70	6.94	2.96	1.79					
IN.	1.29	3.87	4.10	3.11	7.22	3.40	2.00					
AC-FT	48	145	153	116	270	127	75					

12119600 MAY CREEK AT MOUTH, NEAR RENTON, WA

LOCATION.--Lat 47°31'48", long 122°12'00", in NE¼NW¼ sec.32, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank at road crossing, 0.21 mi (0.34 km) upstream from mouth, and 2 mi (3.2 km) north of Renton.

DRAINAGE AREA.--12.7 mi² (32.9 km²).

PERIOD OF RECORD.--August 1964 to September 1971, water years 1973-77 (annual maximum), January 1978 to April 1979 (discontinued).

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Altitude of gage is 25 ft (7.6 m) from topographic map.

REMARKS.--Records good. Some minor diversions for irrigation above station. No regulation.

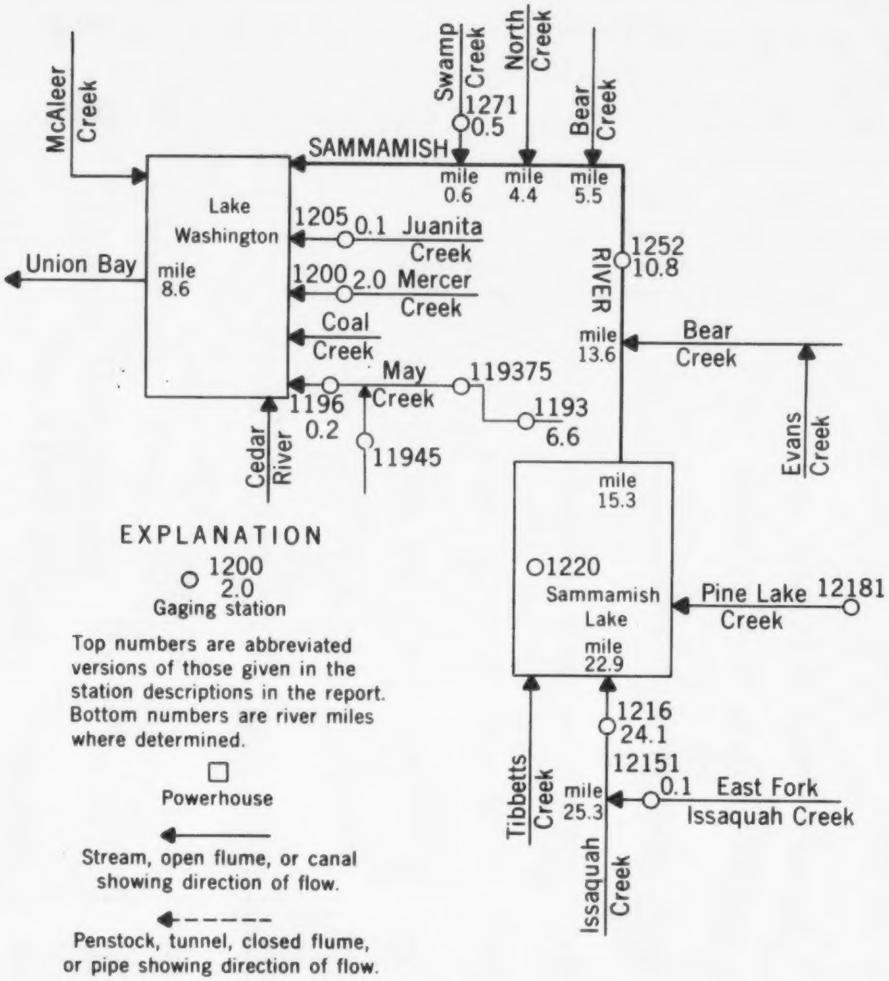
AVERAGE DISCHARGE.-- 7 years (water years 1965-71), 21.7 ft³/s (0.61 m³/s), 23.20 in/yr (589 mm/yr), 15,720 acre-ft/yr (19.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 510 ft³/s (14.4 m³/s) Dec. 3, 1975, gage height, 4.20 ft (1.280 m), possibly influenced by a mud slide washout upstream; minimum recorded, 2.2 ft³/s (0.06 m³/s) Aug. 18, 1967, gage height, 1.18 ft (0.360 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period October 1978 to April 1979, also maximum for the year, 228 ft³/s (6.46 m³/s) Feb. 12, gage height, 3.45 ft (1.052 m); minimum during period October 1978 to April 1979, 5.9 ft³/s (0.167 m³/s) Oct, 14-20, Nov. 1, 2, gage height, 1.58 ft (0.482 m).

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1978 TO APRIL 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	6.1	109	9.4	15	47	11					
2	7.8	11	87	9.0	14	38	12					
3	7.3	33	60	8.8	13	33	11					
4	7.1	68	76	8.6	13	47	12					
5	6.8	44	78	8.4	32	66	12					
6	6.4	24	63	8.2	51	56	12					
7	6.2	18	47	8.0	75	48	11					
8	6.4	19	38	7.7	66	40	11					
9	6.2	25	35	7.6	75	34	13					
10	6.4	18	31	23	77	30	17					
11	6.4	15	30	18	94	27	15					
12	6.2	13	25	17	174	24	16					
13	6.2	12	22	15	168	22	23					
14	6.1	11	23	14	103	20	19					
15	6.1	11	20	15	72	23	17					
16	6.1	22	18	14	55	20	16					
17	6.1	24	17	13	46	18	16					
18	6.1	25	16	12	40	17	14					
19	6.1	37	14	12	36	16	14					
20	7.1	28	14	22	29	15	13					
21	7.1	22	15	60	30	14	12					
22	6.4	18	20	47	26	14	11					
23	8.5	16	18	43	28	13	11					
24	11	15	17	45	45	13	11					
25	8.0	14	15	35	71	12	10					
26	7.1	13	14	29	72	12	10					
27	6.6	15	13	26	69	12	9.3					
28	6.8	22	12	24	58	12	9.0					
29	6.8	24	11	20	---	11	9.0					
30	6.4	54	10	18	---	11	9.0					
31	6.1	---	9.6	16	---	11	---					
TOTAL	212.2	677.1	977.6	613.7	1647	776	386.3	---	---	---	---	---
MEAN	6.85	22.6	31.5	19.8	58.8	25.0	12.9	---	---	---	---	---
MAX	11	68	109	60	174	66	23	---	---	---	---	---
MIN	6.1	6.1	9.6	7.6	13	11	9.0	---	---	---	---	---
CFSM	.54	1.78	2.48	1.56	4.63	1.97	1.02	---	---	---	---	---
IN.	.62	1.98	2.86	1.80	4.82	2.27	1.13	---	---	---	---	---
AC-FT	421	1340	1940	1220	3270	1540	766	---	---	---	---	---


McAleer Creek
Swamp Creek
1271
0.5
North Creek
Bear Creek
SAMMAMISH
mile 0.6
mile 4.4
mile 5.5
Lake Washington
mile 8.6
Union Bay
1205
0.1
Juanita Creek
1200
2.0
Mercer Creek
Coal Creek
May Creek
119375
1193
6.6
1196
0.2
11945
Cedar River
RIVER
1252
10.8
mile 13.6
Bear Creek
Evans Creek
mile 15.3
1220
Sammamish Lake
mile 22.9
Pine Lake Creek
12181
1216
24.1
12151
0.1
East Fork Issaquah Creek
mile 25.3
Tibbetts Creek
Issaquah Creek
EXPLANATION
1200
2.0
Gaging station
Powerhouse

Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.

Stream, open flume, or canal showing direction of flow.

Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 14. Gaging stations in Lake Washington basin (below Cedar River).

12120000 MERCER CREEK NEAR BELLEVUE, WA

LOCATION.--Lat 47°36'11", long 122°10'47", in NW¼NW¼ sec.4, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on left bank 40 ft (12 m) upstream from Northern Pacific Railway trestle, 1.2 mi (1.9 km) southeast of Bellevue, and 2.0 mi (3.2 km) upstream from mouth.

DRAINAGE AREA.--12.0 mi² (31.1 km²)

PERIOD OF RECORD.--June to October 1945, June 1955 to current year.

REVISED RECORDS.--WSP 1446: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 17.11 ft (5.215 m) National Geodetic Vertical Datum of 1929 (levels by Municipality of Metropolitan Seattle engineers). Prior to June 5, 1959, at site 600 ft (183 m) downstream at different datums.

REMARKS.--Records good except those above 200 ft³/s (5.66 m³/s) which are poor. Some small diversions for irrigation and domestic use. No regulation.

AVERAGE DISCHARGE.--24 years, 22.2 ft³/s (0.629 m³/s), 25.12 in/yr (638 mm/yr), 16,080 acre-ft/yr (19.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 402 ft³/s (11.4 m³/s) Mar. 6, 1972, gage height, 8.68 ft (2.646 m), from high-water mark in well, from rating curve extended above 180 ft³/s (5.10 m³/s) on basis of computation of peak flow through culvert; minimum, 1.9 ft³/s (0.054 m³/s) Aug. 6, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 170 ft³/s (4.81 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0330	*346	9.80	*4.62	1.408	Feb. 12	0015	182	5.15	3.10	0.945

Minimum discharge, 5.6 ft³/s (0.16 m³/s) June 26, gage height, 0.33 (0.101 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	11	90	9.3	13	21	13	10	9.1	40	7.9	11
2	11	37	33	9.2	12	19	22	10	9.1	17	7.9	48
3	10	99	26	9.1	11	20	15	10	8.5	12	7.9	24
4	9.8	149	65	9.0	18	45	19	19	7.9	12	7.9	21
5	9.8	32	38	8.9	39	51	22	27	13	11	7.5	25
6	9.8	22	24	8.8	49	27	24	18	11	10	7.6	15
7	9.8	18	20	8.7	41	30	19	14	8.5	9.6	7.8	12
8	9.4	29	18	9.0	34	21	17	12	7.9	9.1	8.1	40
9	11	35	22	9.5	46	19	22	13	7.9	8.9	8.2	23
10	16	18	20	76	51	17	27	11	7.4	18	7.7	14
11	11	15	23	27	65	17	36	10	7.4	10	7.9	12
12	11	14	18	20	142	16	46	9.8	7.1	17	7.7	11
13	11	13	15	16	77	15	52	9.8	7.1	11	7.8	10
14	11	13	15	15	37	15	25	9.1	7.1	9.2	9.7	10
15	11	15	14	15	27	20	21	9.1	7.1	8.5	10	9.8
16	10	48	14	14	26	17	21	10	9.8	8.1	12	9.6
17	10	43	16	13	30	15	39	9.1	13	7.9	20	8.8
18	10	48	14	12	33	14	20	8.5	9.4	7.9	13	8.9
19	10	61	13	13	26	14	17	8.5	11	7.8	16	9.1
20	25	37	15	27	20	14	16	8.2	8.2	7.7	12	9.1
21	13	25	18	87	22	13	17	7.9	7.6	7.9	12	9.1
22	11	20	54	30	18	13	17	8.2	7.1	7.7	12	8.9
23	14	19	23	30	24	13	14	7.9	7.1	7.5	11	8.8
24	52	23	19	37	53	13	13	7.6	6.5	7.2	9.8	8.4
25	14	22	16	22	97	13	13	7.4	5.9	7.3	9.4	8.7
26	12	20	15	20	63	13	12	8.5	5.9	8.1	9.0	8.7
27	12	27	15	19	43	13	12	13	6.2	8.4	8.3	8.6
28	12	37	13	18	26	13	12	26	6.2	8.5	8.2	9.1
29	12	45	11	17	---	13	12	12	6.2	8.4	8.2	8.8
30	11	105	10	15	---	13	11	11	9.4	8.1	8.2	8.5
31	11	---	9.4	14	---	17	---	9.8	---	8.1	8.1	---
TOTAL	401.6	1100	716.4	638.5	1143	574	626	355.4	245.6	329.9	298.8	418.9
MEAN	13.0	36.7	23.1	20.6	40.8	18.5	20.9	11.5	8.19	10.6	9.64	14.0
MAX	52	149	90	87	142	51	52	27	13	40	20	48
MIN	9.4	11	9.4	8.7	11	13	11	7.4	5.9	7.2	7.5	8.4
CFSM	1.08	3.06	1.93	1.72	3.40	1.54	1.74	.96	.68	.88	.80	1.17
IN.	1.24	3.41	2.22	1.98	3.54	1.78	1.94	1.10	.76	1.02	.93	1.30
AC-FT	797	2180	1420	1270	2270	1140	1240	705	487	654	593	831

CAL YR 1978 TOTAL 7823.9 MEAN 21.4 MAX 149 MIN 6.5 CFSM 1.78 IN 24.25 AC-FT 15520
WTR YR 1979 TOTAL 6848.1 MEAN 18.8 MAX 149 MIN 5.9 CFSM 1.57 IN 21.23 AC-FT 13580

12120500 JUANITA CREEK NEAR KIRKLAND, WA

LOCATION.--Lat 47°42'20", long 122°12'56", in SW¼SE¼ sec.30, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 0.1 mi (0.2 km) upstream from mouth and Lake Washington, and 1.7 mi (2.7 km) north of Kirkland.

DRAINAGE AREA.--6.69 mi² (17.33 km²). Prior to May 3, 1972, 6.43 mi² (16.65 km²).

PERIOD OF RECORD.--June to October 1945, September 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Recording gage. Altitude of gage is 20 ft (6 m), from topographic map. Prior to Oct. 2, 1945, water-stage recorder at site 1,500 ft (457 m) upstream at different datum. Sept. 1, 1963 to May 2, 1972, water-stage recorder and concrete control at site 1,000 ft (305 m) upstream at different datum. May 3, 1972 to Oct. 27, 1972 nonrecording gage at present site and different datum.

REMARKS.--Records poor. No known regulation. Probably several small diversions above station for domestic use.

AVERAGE DISCHARGE:--14 years (water years 1964-72, 1975-79) 10.5 ft³/s (0.297 m³/s), 21.31 in/yr (541 mm/yr), 7,610 acre-ft/yr (9.38 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 257 ft³/s (7.28 m³/s) Dec. 4, 1975; maximum gage height, 6.15 ft (1.875 m), Nov. 4, 1978, backwater from debris; minimum discharge, 0.58 ft³/s (0.016 m³/s) Sept. 13, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 70 ft³/s (1.98 m³/s) Nov. 4, maximum gage height, Nov. 4 (6.15 ft (1.875 m), backwater from debris; minimum discharge, 1.9 ft³/s (0.054 m³/s) Aug. 15, gage height, 0.41 (0.125 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	4.1	42	5.0	6.2	11	7.1	6.1	7.8	14	2.6	3.4
2	5.0	24	18	4.8	5.9	9.7	9.6	5.6	7.0	6.7	2.6	13
3	4.6	45	15	4.6	5.7	10	7.8	6.6	4.2	4.6	2.6	6.5
4	4.6	70	20	4.5	7.7	18	13	11	4.6	4.3	2.4	4.1
5	4.4	28	18	4.4	11	15	9.0	13	7.5	4.1	2.4	8.4
6	4.4	12	13	4.3	16	11	7.8	11	8.9	4.0	2.4	3.8
7	4.1	9.6	11	4.2	13	14	7.7	5.9	4.7	3.9	2.4	2.8
8	4.1	18	10	4.8	11	9.7	7.7	4.8	4.2	3.8	2.4	5.6
9	6.5	20	10	5.2	16	8.7	7.7	5.4	4.1	5.0	2.4	3.1
10	5.4	10	11	22	20	8.1	8.1	4.4	4.1	12	2.2	2.4
11	4.4	8.0	14	11	21	7.4	8.4	4.1	4.0	4.4	2.2	2.4
12	4.1	7.0	9.4	12	52	7.4	8.4	4.4	4.2	4.9	2.2	2.2
13	4.1	6.2	7.7	8.4	41	7.4	12	4.8	4.9	3.6	2.0	2.2
14	4.1	6.2	8.4	7.7	22	7.1	10	4.6	4.2	3.4	4.1	2.2
15	4.1	14	7.4	7.7	18	11	8.0	4.7	4.8	3.4	2.6	2.4
16	4.1	25	7.1	7.4	17	8.6	7.8	5.0	5.3	2.9	2.6	2.4
17	4.1	23	6.8	7.1	23	8.1	7.6	4.4	5.4	2.9	3.4	2.4
18	4.1	24	7.1	6.5	23	7.9	7.4	4.3	6.4	2.9	3.1	2.4
19	4.1	20	6.5	6.8	20	7.6	7.2	4.1	5.5	2.9	3.1	2.4
20	8.4	16	6.8	13	16	7.4	6.9	4.2	4.1	2.9	2.6	2.4
21	5.6	11	6.5	23	12	7.3	6.5	4.3	4.2	2.9	2.6	2.4
22	4.4	8.6	21	11	8.7	7.1	6.2	4.3	4.3	2.9	2.6	2.4
23	8.4	7.4	11	14	10	7.0	5.9	4.2	4.5	2.9	2.4	2.4
24	8.7	10	13	13	27	6.8	6.0	4.2	4.4	2.9	2.4	2.4
25	5.1	8.8	8.1	9.4	55	6.8	6.0	4.1	4.3	2.9	2.2	2.4
26	4.6	7.7	7.4	8.4	28	6.5	6.4	5.4	4.2	2.9	2.2	2.2
27	4.4	8.0	7.4	8.4	21	6.6	7.5	7.0	3.9	2.6	2.4	2.2
28	4.4	21	6.5	7.7	14	6.5	6.5	6.8	3.6	2.6	2.4	2.4
29	4.4	20	5.9	7.1	---	10	5.1	6.5	4.9	2.6	2.4	2.4
30	4.1	52	5.6	6.5	---	7.0	5.1	7.1	7.4	2.6	2.4	2.2
31	4.1	---	5.2	6.3	---	8.2	---	7.5	---	2.6	2.6	---
TOTAL	152.3	544.6	346.8	266.2	541.2	274.9	230.4	179.8	151.6	127.0	78.9	99.9
MEAN	4.91	18.2	11.2	8.59	19.3	8.87	7.68	5.80	5.05	4.10	2.55	3.33
MAX	8.7	70	42	23	55	18	13	13	8.9	14	4.1	13
MIN	4.1	4.1	5.2	4.2	5.7	6.5	5.1	4.1	3.6	2.6	2.0	2.2
CFSM	.73	2.72	1.67	1.28	2.89	1.33	1.15	.87	.76	.61	.38	.50
IN.	.85	3.03	1.93	1.48	3.01	1.53	1.28	1.00	.84	.71	.44	.56
AC-FT	302	1080	688	528	1070	545	457	357	301	252	156	198

CAL YR 1978 TOTAL 3823.6 MEAN 10.5 MAX 70 MIN 3.1 CFSM 1.57 IN 21.26 AC-FT 7580
WTR YR 1979 TOTAL 2993.6 MEAN 8.20 MAX 70 MIN 2.0 CFSM 1.23 IN 16.64 AC-FT 5940

12121510 EAST FORK ISSAQUAH CREEK AT MOUTH, AT ISSAQUAH, WA

LOCATION.--Lat 47°32'08", long 122°02'11", in NE¼SE¼ sec.28, T.24 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank between road and Burlington Northern Railroad, in Issaquah and at mile 0.1 (0.2 km).

DRAINAGE AREA.--9.50 mi² (24.60 km²).

PERIOD OF RECORD.--March 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 76 ft (23.2 m) from topographic map.

REMARKS.--Records good. Many minor diversions for irrigation and domestic use above station. At times dairy products plant discharges water just above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 540 ft³/s (15.3 m³/s) Dec. 3, 1975, gage height, 5.39 ft (1.643 m); minimum, 0.80 ft³/s (0.023 m³/s) July 27, 1975, gage height, 0.87 ft (0.265 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 172 ft³/s (4.87 m³/s) Feb. 12, gage height, 2.87 ft (0.875 m); minimum, 2.0 ft³/s (0.057 m³/s) on part of many days in August and September, gage height, 0.96 ft (0.293 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	6.6	131	16	17	52	12	11	5.5	12	2.6	3.1
2	7.6	11	73	15	16	42	14	10	5.2	7.5	2.7	6.6
3	6.9	48	51	14	15	38	13	10	5.1	5.3	2.7	6.6
4	6.9	94	73	13	17	46	15	12	4.9	4.6	2.8	4.4
5	6.3	39	65	12	37	53	15	16	5.7	4.5	2.6	4.2
6	6.0	23	50	12	64	48	14	15	6.0	4.3	2.8	3.6
7	5.7	18	39	11	85	46	13	13	5.3	4.1	2.6	3.4
8	5.7	32	33	11	66	39	14	12	5.0	4.0	2.6	4.5
9	6.0	35	35	13	86	35	18	12	4.7	4.3	2.6	4.6
10	6.3	25	33	30	95	30	23	10	4.5	5.2	2.6	4.2
11	5.4	20	37	24	97	26	23	10	4.3	4.3	2.6	3.5
12	5.1	17	32	23	151	24	29	9.6	4.4	4.1	2.7	3.2
13	4.8	14	28	22	126	22	52	9.3	4.3	3.8	2.6	3.1
14	4.8	12	31	20	81	21	42	9.3	4.3	3.6	2.7	3.0
15	4.6	12	26	19	59	22	33	8.5	4.3	3.6	2.8	2.9
16	4.6	29	24	18	48	20	29	8.1	4.6	3.7	2.9	2.8
17	4.3	36	23	18	43	19	25	8.1	4.8	3.4	3.1	2.9
18	4.3	36	21	17	40	18	22	7.8	4.4	3.2	3.2	2.7
19	4.3	32	19	17	37	17	20	7.5	4.9	3.3	3.3	2.8
20	7.9	25	19	30	32	16	18	7.3	4.8	3.2	3.1	2.8
21	6.9	20	25	84	31	15	17	7.0	4.4	3.1	2.9	2.6
22	5.4	17	57	56	27	15	16	6.8	4.1	3.0	3.0	2.7
23	7.9	15	51	44	32	14	15	6.6	4.0	3.1	2.7	2.5
24	19	13	47	38	60	14	14	6.5	3.8	2.8	2.6	2.7
25	9.3	12	39	30	90	13	13	6.4	3.9	2.8	2.6	2.7
26	7.9	11	33	27	96	13	13	6.3	3.7	2.8	2.6	2.7
27	7.2	14	30	25	87	13	12	6.3	3.7	2.7	2.6	3.0
28	8.2	20	25	23	65	12	12	6.5	3.6	2.7	2.6	2.6
29	8.6	21	22	21	---	12	12	6.3	3.6	2.7	2.5	2.7
30	7.2	92	19	19	---	12	11	6.0	4.7	2.9	2.7	2.6
31	6.9	---	17	18	---	13	---	5.7	---	2.8	2.5	---
TOTAL	209.9	799.6	1208	740	1700	780	579	276.9	136.5	123.4	84.9	101.7
MEAN	6.77	26.7	39.0	23.9	60.7	25.2	19.3	8.93	4.55	3.98	2.74	3.39
MAX	19	94	131	84	151	53	52	16	6.0	12	3.3	6.6
MIN	4.3	6.6	17	11	15	12	11	5.7	3.6	2.7	2.5	2.5
CFSM	.71	2.81	4.11	2.52	6.39	2.65	2.03	.94	.48	.42	.29	.36
IN.	.82	3.13	4.73	2.90	6.66	3.05	2.27	1.08	.53	.48	.33	.40
AC-FT	416	1590	2400	1470	3370	1550	1150	549	271	245	168	202

CAL YR 1978 TOTAL 7658.4 MEAN 21.0 MAX 131 MIN 3.6 CFSM 2.21 IN 29.99 AC-FT 15190
WTR YR 1979 TOTAL 6739.9 MEAN 18.5 MAX 151 MIN 2.5 CFSM 1.95 IN 26.39 AC-FT 13370

12121600 ISSAQUAH CREEK NEAR MOUTH, NEAR ISSAQUAH, WA

LOCATION.--Lat 47°33'09", long 122°02'46", in SE¼NW¼ sec.21, T.24 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank 30 ft (9 m) downstream from SE 56th Street bridge, 0.7 mi (1.1 km) downstream from North Fork, 1.2 mi (1.9 km) upstream from mouth, and 1.6 mi (2.6 km) northwest of Issaquah.

DRAINAGE AREA.--56.6 mi² (146.6 km²) includes 1.9 mi² (4.9 km²) of Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--September 1963 to current year. Water quality records 1965-71, 1974, 1976, water temperatures September 1970 to September 1971.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (12 m), from topographic map.

REMARKS.--Records good except those for Dec. 1 to Jan. 25, which are fair. Many minor diversions for irrigation and domestic use above station.

AVERAGE DISCHARGE.--16 years, 140 ft³/s (3.965 m³/s) 33.59 in/yr (853 mm/yr), 101,400 acre-ft/yr (125 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,870 ft³/s (81.3 m³/s) Dec. 3, 1975, gage height, 11.46 ft (3.493 m); minimum, 15 ft³/s (0.42 m³/s) Aug. 18, 1977; minimum gage height, 2.34 ft (0.713 m) Sept. 21, 22, 29, 30, Oct. 12, 13, 16, 1963.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 800 ft³/s (22.7 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 1	0600	*836	23.7	*6.91	2.106	Feb. 12	2000	820	23.2	6.40	1.951

Minimum discharge, 18 ft³/s (0.51 m³/s) Aug. 13, gage height, 2.87 ft (0.088 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	42	695	66	88	287	74	67	37	73	23	31
2	46	54	420	63	83	232	86	74	36	67	24	72
3	43	209	306	59	78	214	86	71	34	45	23	67
4	43	485	465	56	92	278	111	82	36	42	24	42
5	41	217	395	54	193	360	123	102	43	41	23	38
6	38	142	296	52	338	324	106	109	41	37	23	34
7	36	119	225	50	487	299	102	97	40	36	22	32
8	37	170	183	50	345	250	104	91	35	26	22	36
9	38	186	183	60	440	212	97	89	36	24	22	36
10	40	153	177	160	480	179	128	83	37	32	21	31
11	39	134	230	115	475	153	133	76	37	29	21	27
12	36	120	187	100	736	140	147	73	33	28	21	25
13	36	111	175	92	670	133	230	71	30	30	19	24
14	39	102	149	85	455	126	196	68	31	25	23	22
15	38	100	135	80	335	137	168	65	32	26	25	21
16	38	142	130	77	285	135	154	63	32	25	28	21
17	38	209	116	76	253	111	143	59	35	28	31	20
18	36	196	111	74	227	108	130	52	36	28	32	20
19	36	186	128	74	206	109	125	49	45	27	34	20
20	50	147	227	150	181	102	111	48	45	27	32	22
21	49	127	270	470	177	96	97	45	40	27	31	23
22	41	113	330	380	158	94	91	44	37	27	32	22
23	45	96	168	270	175	91	85	44	35	27	31	22
24	87	92	149	190	308	85	80	44	35	27	30	22
25	59	87	128	165	437	80	77	43	33	26	29	22
26	51	84	97	140	487	77	77	43	32	26	29	21
27	43	92	96	130	445	76	68	46	32	26	28	22
28	47	147	88	118	350	76	67	50	31	26	29	22
29	55	130	82	109	---	73	67	46	30	25	28	21
30	52	385	75	102	---	73	60	42	37	24	30	23
31	44	---	71	94	---	77	---	41	---	24	30	---
TOTAL	1371	4577	6487	3761	8984	4787	3323	1977	1073	981	820	861
MEAN	44.2	153	209	121	321	154	111	63.8	35.8	31.6	26.5	28.7
MAX	87	485	695	470	736	360	230	109	45	73	34	72
MIN	36	42	71	50	78	73	60	41	30	24	19	20
CFSM	.81	2.80	3.82	2.21	5.87	2.82	2.03	1.17	.65	.58	.48	.53
IN.	.93	3.11	4.41	2.56	6.11	3.26	2.26	1.34	.73	.67	.56	.59
AC-FT	2720	9080	12870	7460	17820	9500	6590	3920	2130	1950	1630	1710

CAL YR 1978 TOTAL 43116 MEAN 118 MAX 695 MIN 29 CFSM 2.16 IN 29.32 AC-FT 85520
WTR YR 1979 TOTAL 39002 MEAN 107 MAX 736 MIN 19 CFSM 1.96 IN 26.52 AC-FT 77360

12122000 SAMMAMISH LAKE NEAR REDMOND, WA

LOCATION.--Lat 47°34'47", long 122°06'38", in NE¼SW¼ sec.12, T.24 N., R.5 E., King County, Hydrologic Unit 17110012, on west shore 5.6 mi (9.0 km) uplake from outlet and 6.5 mi (10.5 km) south of Redmond.

DRAINAGE AREA.--99.6 mi² (258.0 km²), includes 1.9 mi² (4.9 km²) Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--January 1939 to current year.

REVISED RECORDS.--WSP 1446: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 24.04 ft (7.327 m) National Geodetic Vertical Datum of 1929. Prior to June 22, 1942, nonrecording gage 4.6 mi (7.4 km) downlake at datum 1.00 ft (0.305 m) higher. June 22, 1942, to Aug. 22, 1951, nonrecording gage 4.5 mi (7.2 km) downlake at datum 1.00 ft (0.305 m) higher and Aug. 23, 1951, to Apr. 29, 1965, at present datum.

REMARKS.--Records good. Minor regulation on tributaries. Many small diversions from tributaries for irrigation and domestic use.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 9.40 ft (2.865 m) Feb. 12, 1951 (present datum); minimum observed, 1.09 ft (0.332 m) Aug. 25-27, 1951.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 10.83 ft (3.301 m), present datum, was observed on Dec. 22, 1933, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 3.67 ft (1.119 m) Feb. 14, 15; minimum, 1.48 ft (0.451 m) Aug. 13-14, 16.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.34	1.98	2.95	2.45	2.47	3.28	2.25	2.22	1.99	1.76	1.64	1.51
2	2.31	1.99	3.09	2.41	2.44	3.22	2.25	2.20	1.98	1.79	1.63	1.57
3	2.28	2.12	3.13	2.38	2.42	3.16	2.24	2.19	1.98	1.79	1.61	1.63
4	2.25	2.47	3.23	2.34	2.40	3.15	2.25	2.19	1.97	1.78	1.60	1.64
5	2.22	2.57	3.29	2.31	2.42	3.19	2.27	2.22	1.97	1.79	1.58	1.65
6	2.20	2.59	3.29	2.28	2.49	3.19	2.27	2.24	1.97	1.78	1.57	1.65
7	2.17	2.56	3.26	2.24	2.69	3.18	2.27	2.24	1.97	1.78	1.56	1.65
8	2.15	2.58	3.21	2.22	2.80	3.15	2.26	2.22	1.96	1.77	1.54	1.67
9	2.13	2.62	3.17	2.20	2.91	3.10	2.27	2.22	1.95	1.78	1.53	1.71
10	2.12	2.62	3.13	2.27	3.03	3.04	2.29	2.20	1.95	1.80	1.53	1.71
11	2.09	2.59	3.09	2.32	3.16	2.98	2.33	2.19	1.93	1.80	1.51	1.70
12	2.08	2.55	3.06	2.33	3.42	2.92	2.37	2.18	1.91	1.80	1.50	1.69
13	2.06	2.52	3.01	2.33	3.62	2.86	2.45	2.16	1.87	1.80	1.49	1.68
14	2.03	2.48	2.95	2.32	3.66	2.81	2.49	2.15	1.86	1.80	1.48	1.67
15	2.03	2.44	2.91	2.31	3.61	2.77	2.51	2.13	1.84	1.79	1.48	1.66
16	2.02	2.48	2.86	2.31	3.53	2.72	2.51	2.13	1.83	1.79	1.49	1.66
17	2.01	2.55	2.80	2.29	3.46	2.69	2.52	2.13	1.83	1.78	1.51	1.65
18	2.00	2.60	2.76	2.28	3.38	2.65	2.50	2.11	1.83	1.77	1.53	1.64
19	1.98	2.70	2.71	2.27	3.31	2.61	2.48	2.10	1.82	1.76	1.55	1.63
20	2.00	2.70	2.67	2.29	3.22	2.57	2.46	2.08	1.82	1.75	1.55	1.63
21	2.01	2.68	2.64	2.48	3.15	2.52	2.43	2.07	1.81	1.74	1.55	1.62
22	2.00	2.65	2.69	2.58	3.08	2.49	2.41	2.05	1.80	1.73	1.56	1.62
23	1.99	2.62	2.74	2.62	3.02	2.45	2.38	2.04	1.79	1.72	1.57	1.60
24	2.06	2.59	2.74	2.67	3.03	2.41	2.36	2.03	1.78	1.71	1.56	1.60
25	2.06	2.55	2.74	2.67	3.15	2.38	2.33	2.02	1.77	1.70	1.55	1.59
26	2.04	2.52	2.71	2.66	3.26	2.35	2.31	2.00	1.76	1.70	1.55	1.58
27	2.03	2.49	2.68	2.64	3.32	2.33	2.28	2.00	1.75	1.68	1.54	1.57
28	2.03	2.53	2.65	2.61	3.32	2.30	2.26	2.03	1.74	1.66	1.53	1.57
29	2.02	2.54	2.60	2.58	---	2.27	2.25	2.03	1.72	1.66	1.52	1.56
30	2.01	2.67	2.55	2.55	---	2.25	2.24	2.01	1.71	1.65	1.51	1.55
31	2.00	---	2.50	2.51	---	2.26	---	2.00	---	1.65	1.50	---
MEAN	2.09	2.52	2.90	2.41	3.06	2.75	2.35	2.12	1.86	1.75	1.54	1.63
MAX	2.34	2.70	3.29	2.67	3.66	3.28	2.52	2.24	1.99	1.80	1.64	1.71
MIN	1.98	1.98	2.50	2.20	2.40	2.25	2.24	2.00	1.71	1.65	1.48	1.51

WTR YR 1979 MEAN 2.24 MAX 3.66 MIN 1.48

12122500 BEAR CREEK NEAR REDMOND, WA

LOCATION (revised).--Lat 47°43'04", long 122°04'34", in NW¼NW¼ sec.29, T.26 N., R.6 E., King County, Hydrologic Unit 17110012, on right bank, 1.0 mi (1.6 km) upstream from Cottage Lake Creek and 3.5 mi (5.6 km) northeast of Redmond.

DRAINAGE AREA.--13.9 mi² (36.0 km²), revised.

PERIOD OF RECORD.--June 1945 to Oct. 1949, May 1979 to September 1979.

GAGE.--Water-stage recorder. Altitude of gage is 110 ft (34 m), from topographic map. June 1945 to October 1949 at different datum.

REMARKS.--Records good. No known diversion or regulation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 196 ft³/s (5.55 m³/s) Feb. 22, 1949, gage height, 3.83 ft (1.167 m), maximun gage height, 3.89 ft (1.186 m); minimum discharge, 3.1 ft³/s(0.09 m³/s) Aug. 22, 1946, gage height, 1.34 ft (0.408 m) at datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period May to September 1979, 18 ft³/s (0.51 m³/s) July 2, Sept. 2, gage height, 1.43 ft (0.436 m); minimum discharge, 5.3 ft³/s (0.15 m³/s) on all or part of each day Sept. 14-17, gage height, 1.07 ft (0.326 m), minimum gage height, 1.03 ft (0.314 m) on part of each day Aug.2, 8-12.

DISCHARGE, IN CUBIC FEET PER SECOND, MAY TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								---	8.9	11	6.4	7.9
2								---	8.7	15	6.4	13
3								---	8.7	11	6.4	13
4								---	8.7	9.2	6.4	11
5								---	9.5	8.1	6.4	11
6								---	11	7.6	6.4	9.5
7								---	9.8	7.4	6.4	7.9
8								---	8.9	7.4	6.1	8.1
9								---	8.4	7.1	6.1	9.2
10								---	8.4	8.4	6.1	7.6
11								---	8.4	8.1	6.4	6.9
12								---	8.1	10	6.1	6.4
13								---	8.1	8.7	6.1	5.7
14								---	7.9	7.9	6.9	5.5
15								---	7.9	7.4	7.6	5.5
16								12	8.9	7.1	7.6	5.3
17								11	9.5	6.9	9.5	5.7
18								11	9.5	6.6	9.5	5.9
19								10	9.8	6.6	9.5	5.9
20								10	9.5	6.4	9.2	6.1
21								9.8	8.9	6.4	8.7	6.4
22								9.8	8.7	6.4	8.4	6.1
23								9.8	8.4	6.4	8.4	6.1
24								9.5	8.1	6.4	8.1	6.4
25								9.2	7.9	6.6	7.6	6.4
26								9.2	7.6	6.4	7.4	6.4
27								9.5	7.4	6.6	7.4	6.4
28								11	7.4	6.6	7.4	6.6
29								11	7.4	6.6	7.4	6.9
30								10	8.1	6.4	7.6	6.9
31								9.5	---	6.4	7.6	---
TOTAL								---	258.5	239.1	227.5	221.7
MEAN								---	8.62	7.71	7.34	7.39
MAX								---	11	15	9.5	13
MIN								---	7.4	6.4	6.1	5.3
AC-FT								---	513	474	451	440

12125200 SAMMAMISH RIVER NEAR WOODINVILLE, WA

LOCATION.--Lat 47°42'15", long 122°08'29", in SW¼SW¼ sec.26, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, on right bank 3.9 mi (6.3 km) upstream from Bear Creek, 3.6 mi (5.8 km) southeast of Woodinville, and at mile 10.8 (17.4 km).

DRAINAGE AREA.--159 mi² (412 km²) includes 1.9 mi² (4.9 km²) of Cedar River drainage from upper Rock Creek which normally is diverted into Issaquah Creek.

PERIOD OF RECORD.--January 1965 to current year, water temperatures August 1965 to February 1967.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to July 7, 1970, auxiliary water-stage recorder 2 mi (3.2 km) downstream from base gage at same datum.

REMARKS.--Records fair. Natural regulation from Sammamish Lake and some minor regulation. Many small diversions for irrigation and domestic use.

AVERAGE DISCHARGE.--14 years, 328 ft³/s (9.289 m³/s), 28.01 in/yr (711 mm/yr), 237,600 acre-ft/yr (293 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,390 ft³/s (67.7 m³/s) Mar. 6, 1972, elevation, 25.83 ft (7.873 m); minimum daily, 25 ft³/s (0.71 m³/s) Aug. 2, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,140 ft³/s (32.3 m³/s) Feb. 13, elevation, 21.02 ft (6.407 m); minimum daily, 52 ft³/s (1.47 m³/s) July 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	255	116	737	307	301	718	205	181	126	129	53	69
2	237	134	709	300	269	664	215	181	118	156	56	91
3	224	263	674	284	264	626	215	177	99	134	56	109
4	212	630	678	268	258	629	247	185	94	125	55	96
5	203	496	711	246	303	663	268	202	106	97	54	103
6	191	428	698	236	350	649	251	208	109	90	55	99
7	181	376	666	228	442	647	243	200	107	94	55	87
8	168	372	634	224	462	618	239	199	106	87	55	94
9	164	418	612	211	530	580	266	191	100	80	56	121
10	177	388	594	201	608	548	283	181	109	89	56	92
11	159	356	585	300	676	514	310	178	126	82	58	93
12	145	334	567	300	937	483	339	175	125	95	59	86
13	135	313	542	290	1120	455	426	167	126	85	59	84
14	130	296	528	271	1050	430	390	166	119	82	59	81
15	127	284	517	268	951	428	374	163	119	90	63	82
16	123	317	495	260	856	421	356	157	126	90	61	81
17	121	369	474	255	804	392	386	154	129	91	60	81
18	121	408	454	246	772	366	361	149	134	90	60	80
19	118	492	431	246	714	342	337	145	129	87	64	81
20	131	466	414	276	656	323	318	138	129	84	64	82
21	136	418	401	419	617	306	298	129	126	55	60	84
22	127	388	461	409	576	288	282	125	119	54	61	84
23	125	365	484	402	551	272	269	126	116	61	60	84
24	185	350	495	438	587	259	260	125	113	60	61	85
25	161	339	474	412	796	247	255	125	106	60	63	84
26	149	323	452	396	840	235	240	125	97	60	65	85
27	140	317	433	386	819	225	226	125	97	58	64	85
28	136	374	406	372	770	218	202	143	93	54	65	87
29	135	374	370	356	---	222	188	138	93	53	66	86
30	119	536	347	334	---	213	184	134	97	52	67	86
31	114	---	323	318	---	216	---	129	---	53	71	---
TOTAL	4849	11040	16366	9539	17879	13197	8433	4921	3393	2577	1861	2640
MEAN	156	368	528	308	639	426	281	159	113	83.1	60.0	88.0
MAX	255	630	737	438	1120	718	426	208	134	156	71	121
MIN	114	116	323	211	258	213	184	125	93	52	53	69
CFSM	.99	2.34	3.36	1.96	4.07	2.71	1.79	1.01	.72	.53	.38	.56
IN.	1.15	2.62	3.88	2.26	4.24	3.13	2.00	1.17	.80	.61	.44	.63
AC-FT	9620	21900	32460	18920	35460	26180	16730	9760	6730	5110	3690	5240

CAL YR 1978 TOTAL 109852 MEAN 301 MAX 796 MIN 56 CFSM 1.92 IN 26.03 AC-FT 217900
WTR YR 1979 TOTAL 96695 MEAN 265 MAX 1120 MIN 52 CFSM 1.69 IN 22.91 AC-FT 191800

12126500 SAMMAMISH RIVER AT BOTHELL, WA

LOCATION.--Lat 47°45'32", long 122°12'09", in NW¼NW¼ sec.8, T.26 N., R.5 E., King County, Hydrologic Unit 17110012, at 102nd Street bridge at Bothell, 1.0 mi (1.6 km) downstream from North Creek, 7.3 mi (11.7 km) downstream from gaging station (12125200), and at mile 3.5 (5.6 km).

DRAINAGE AREA.--212 mi² (549 km²).

PERIOD OF RECORD.--Water years 1959-71, 1974 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is fair.

COOPERATION.--Temperature, dissolved oxygen, pH turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
25...	1055	170	135	7.1	10.3	85	5.0
NOV							
15...	1030	286	136	7.2	7.0	40	3.0
DEC							
20...	1100	420	117	7.1	5.0	55	8.0
JAN , 1979							
11...	0830	316	124	7.2	3.5	65	10
FEB							
08...	1030	450	99	7.2	4.8	40	10
MAR							
07...	0945	640	111	6.7	7.9	95	12
APR							
11...	1040	305	115	7.3	8.7	65	7.0
MAY							
16...	1050	160	133	7.2	15.5	60	4.0
JUN							
27...	1025	97	140	7.3	19.5	55	7.0
JUL							
18...	1100	91	145	7.4	21.7	65	4.0
AUG							
29...	1110	66	150	7.4	18.1	45	4.0
SEP							
26...	1000	85	149	7.3	16.4	55	4.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
25...	9.1	.32	.09	.050	.01	.03
NOV						
15...	10.4	.40	.09	.040	.00	.00
DEC						
20...	10.8	.64	.01	.060	.01	.03
JAN , 1979						
11...	11.8	.71	.04	.100	.00	.00
FEB						
08...	11.9	.85	.05	.040	.00	.00
MAR						
07...	11.4	.80	.05	.060	.01	.03
APR						
11...	11.0	.65	.03	.040	.02	.06
MAY						
16...	9.6	.38	.03	.050	.00	.00
JUN						
27...	9.5	.25	.06	.070	.01	.03
JUL						
18...	8.9	.23	.05	.060	.03	.09
AUG						
29...	9.8	.26	.07	.070	.05	.15
SEP						
26...	9.3	.25	.06	.010	.03	.09

12127100 SWAMP CREEK AT KENMORE, WA

LOCATION.--Lat 47°45'22", long 122°13'57", in NE¼ sec.12, T.26 N., R.4 E., King County, Hydrologic Unit 17110012, on right bank on upstream side of Bothell Way bridge (State Highway 522) at Kenmore and at mile 0.5 (0.8 km).

DRAINAGE AREA.--23.1 mi² (59.8 km²).

PERIOD OF RECORD.--October 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 14.46 ft (4.407 m) National Geodetic Vertical Datum of 1929 (Washington State Highway Department). Apr. 27, 1967 to Sept. 7, 1967, nonrecording gage at same site and datum.

REMARKS.--Records fair. Some minor diversions for domestic use upstream from station. No regulation.

AVERAGE DISCHARGE.--14 years (water years 1964-72, 1975-79), 33.4 ft³/s (0.946 m³/s), 19.64 in/yr (499 mm/yr), 24,200 acre-ft/yr (29.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 487 ft³/s (13.8 m³/s) Mar. 5, 1972, gage height, 6.03 ft (1.838 m); minimum, 2.3 ft³/s (0.065 m³/s) Aug. 12, 1977; minimum gage height, 1.71 ft (0.521 m) July 31, Aug. 1, 2, 1965, Aug. 12, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 200 ft³/s (5.66 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0515	*402	11.4	*5.34	1.628
Dec. 1	0615	201	5.69	3.96	1.207
Feb. 13	0915	235	6.66	4.15	1.265
Feb. 25	1100	233	6.60	4.14	1.262

Minimum discharge, 3.6 ft³/s (0.102 m³/s) July 31, gage height, 1.82 ft (0.555 m), minimum gage height, 1.81 ft (0.552 m) Aug. 5, 12, 13, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	11	160	10	17	69	20	14	6.5	15	4.8	5.6
2	11	14	83	9.6	15	54	26	14	6.1	11	6.6	18
3	11	50	59	9.2	14	47	22	15	5.8	9.7	5.6	18
4	11	190	63	9.0	22	63	51	19	5.8	7.3	4.7	11
5	11	40	68	8.9	34	66	52	24	7.4	6.4	4.4	9.9
6	10	25	56	8.6	43	52	39	17	8.8	5.8	4.5	8.3
7	9.9	20	43	8.4	61	64	32	14	7.2	5.5	4.7	6.5
8	9.6	30	33	9.0	53	46	34	13	6.2	5.2	4.7	12
9	10	42	33	10	78	39	44	12	5.9	5.1	4.5	12
10	15	25	31	39	88	33	35	12	5.5	13	4.4	7.2
11	13	19	39	33	90	30	49	12	5.2	7.8	4.4	6.2
12	11	17	30	56	106	27	67	10	5.3	7.0	4.2	5.7
13	10	16	26	34	213	25	127	9.9	5.1	6.4	4.1	5.4
14	9.8	16	45	28	126	24	78	9.3	4.9	5.9	7.9	4.9
15	9.6	30	62	27	87	36	59	8.7	5.0	5.7	9.7	4.6
16	10	64	40	24	73	39	50	15	5.4	5.6	10	4.6
17	10	55	33	24	81	30	56	14	6.1	4.7	8.2	7.0
18	9.9	58	40	21	87	26	45	10	6.5	4.5	5.1	7.8
19	9.8	70	33	21	66	23	41	9.2	6.3	4.2	5.7	5.3
20	20	43	28	33	54	22	36	8.5	5.1	4.3	6.3	6.6
21	21	30	26	71	47	21	32	7.8	5.2	4.6	5.8	6.7
22	14	25	43	45	41	19	28	7.5	5.3	4.7	5.8	6.4
23	13	22	38	42	39	18	23	7.1	5.4	4.7	5.5	5.8
24	31	26	36	59	68	20	21	6.8	5.3	4.3	5.3	6.1
25	17	24	29	40	196	21	19	6.6	5.0	4.2	4.9	6.1
26	14	20	25	33	162	23	19	6.5	4.6	4.2	4.6	6.3
27	13	26	25	32	119	20	18	6.4	4.5	4.2	4.5	6.1
28	12	36	20	29	87	16	17	9.0	4.4	4.5	4.6	5.8
29	13	30	14	25	---	19	15	7.9	4.6	4.1	4.6	5.4
30	12	96	12	22	---	18	14	7.1	5.1	4.0	4.7	4.8
31	11	---	11	19	---	19	---	6.5	---	3.7	5.0	---
TOTAL	394.6	1170	1284	839.7	2227	1029	1169	339.8	169.5	187.3	169.8	226.1
MEAN	12.7	39.0	41.4	27.1	79.5	33.2	39.0	11.0	5.65	6.04	5.48	7.54
MAX	31	190	160	71	213	69	127	24	8.8	15	10	18
MIN	9.6	11	11	8.4	14	16	14	6.4	4.4	3.7	4.1	4.6
CFSM	.55	1.69	1.79	1.17	3.44	1.44	1.69	.48	.25	.26	.24	.33
IN.	.64	1.88	2.07	1.35	3.59	1.66	1.88	.55	.27	.30	.27	.36
AC-FT	783	2320	2550	1670	4420	2040	2320	674	336	372	337	448

CAL YR 1978 TOTAL 11017.4 MEAN 30.2 MAX 190 MIN 5.0 CFSM 1.31 IN 17.74 AC-FT 21850
WTR YR 1979 TOTAL 9205.8 MEAN 25.2 MAX 213 MIN 3.7 CFSM 1.09 IN 14.82 AC-FT 18260

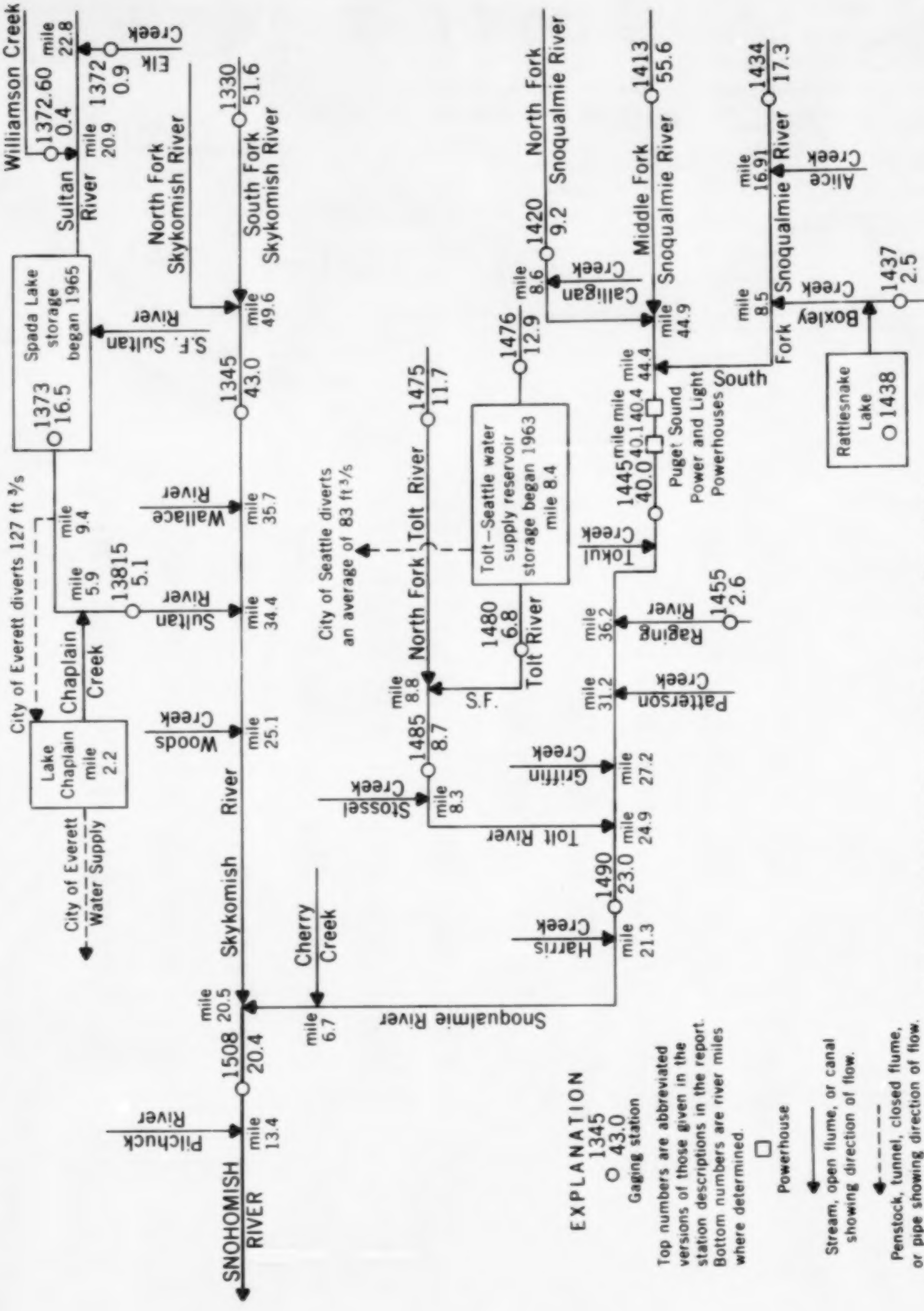

SNOHOMISH RIVER
Pilchuck River
mile 13.4
1508 20.4
mile 20.5
Skykomish River
Snoqualmie River
mile 6.7
Cherry Creek
City of Everett Water Supply
Lake Chaplain mile 2.2
Woods Creek
mile 25.1
City of Everett diverts 127 ft³/s
Chaplain Creek
mile 5.9
13815 5.1
Sultan River
mile 34.4
mile 9.4
Wallace River
mile 35.7
1373 16.5
Spada Lake storage began 1965
1345 43.0
S.F. Sultan River
mile 49.6
North Fork Skykomish River
South Fork Skykomish River
1330 51.6
Sultan River
mile 20.9
1372.60 0.4
Williamson Creek
1372 0.9
Elk Creek
mile 22.8
Harris Creek
mile 21.3
1490 23.0
Tolt River
mile 24.9
Stossel Creek
mile 8.3
1485 8.7
mile 8.8
S.F.
Tolt River
1480 6.8
North Fork Tolt River
City of Seattle diverts an average of 83 ft³/s
Tolt—Seattle water supply reservoir storage began 1963 mile 8.4
1475 11.7
1476 12.9
Griffin Creek
mile 27.2
Patterson Creek
mile 31.2
Raging River
mile 36.2
1455 2.6
Tokul Creek
1445 40.0
mile 40.1
mile 40.4
Puget Sound Power and Light Powerhouses
mile 44.4
South Fork Snoqualmie River
mile 8.5
Rattlesnake Lake
1438
Boxley Creek
1437 2.5
Alice Creek
mile 16.91
1434 17.3
mile 44.9
Middle Fork Snoqualmie River
1413 55.6
Calligan Creek
mile 8.6
1420 9.2
North Fork Snoqualmie River
EXPLANATION
1345
43.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 15. Gaging stations in Snohomish River basin.

12133000 SOUTH FORK SKYKOMISH RIVER NEAR INDEX, WA

LOCATION.--Lat 47°48'20", long 121°32'44", in NE¼ sec.29, T.27 N., R.10 E., Snohomish County, Hydrologic Unit 17110009, on right bank 600 ft (183 m) upstream from Sunset Falls, 1.1 mi (1.8 km) southeast of Index, 2.0 mi (3.2 km) upstream from confluence with North Fork, and at mile 51.6 (83.0 km).

DRAINAGE AREA.--355 mi² (919 km²).

PERIOD OF RECORD.--October 1902 to September 1905, April 1911 to current year.

REVISED RECORDS.--WSP 512: 1903-5, 1911-14. WSP 572: Drainage area. WSP 792: 1934. WSP 1286: 1903-5(M), 1912(M), 1914-29(M), 1931-34(M).

GAGE.--Water-stage recorder. Datum of gage is 574.80 ft (175.199 m) National Geodetic Vertical Datum of 1929. See WSP 1932 for history of changes prior to Mar. 15, 1934.

REMARKS.--Records good. Small diversions for domestic use. No regulation.

AVERAGE DISCHARGE.--71 years (water years, 1903-05, 1912-79), 2,438 ft³/s (69.04 m³/s) 93.26 in/yr (2,369 mm/yr) 1,766,000 acre-ft/yr (2,180 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,000 ft³/s (1,560 m³/s) Dec. 12, 1921, gage height, 22.8 ft (6.95 m), from high-water marks, site then in use, from rating curve extended above 22,500 ft³/s (637 m³/s) on basis of slope-area measurement at gage height 22.12 ft (6.742 m); minimum, 165 ft³/s (4.67 m³/s) Nov. 29, 1952.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of about 5 ft (1.5 m) higher than that of Dec. 12, 1921, discharge, about, 70,000 ft³/s (1,980 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge above base of 12,000 ft³/s (340 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0400	*14,700	416	*12.87	3.923	Mar. 6	0900	12,100	343	11.78	3.591

Minimum discharge, 357 ft³/s (10.1 m³/s) Sept. 27, gage height, 1.09 ft (0.332 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1230	647	2340	940	505	1290	1430	4990	3800	2860	715	489
2	1090	651	1630	890	560	1140	1360	4630	4840	2880	706	787
3	995	2380	1840	830	540	1050	1290	4240	5350	2180	674	1160
4	931	8590	2950	790	594	1850	1560	5400	5270	2010	652	845
5	872	3350	2270	760	1070	6680	1850	5640	5730	1960	621	701
6	822	2260	1790	730	1910	11000	1950	5280	4890	2020	601	647
7	784	2870	1500	710	3540	10300	1890	4290	3560	1960	585	597
8	754	6920	1360	690	2100	6240	1870	3580	3110	1930	565	585
9	731	3670	1310	740	3520	4220	2130	3220	3250	1910	553	652
10	745	2610	1250	926	3750	3280	2010	2940	3670	2530	549	701
11	736	2090	1580	863	3030	2890	1860	2880	4200	2120	549	597
12	704	1780	1540	762	3790	2900	1760	2950	4040	2020	537	541
13	675	1520	1290	694	4000	2760	2500	3190	3540	1740	525	509
14	650	1330	1710	634	3090	2610	2390	3850	2820	1560	537	497
15	633	1210	1830	605	2270	2730	1970	4350	2420	1510	541	489
16	617	1520	1530	588	1860	2800	1750	4910	2350	1520	521	469
17	605	2640	1330	574	1620	2460	1740	4500	2340	1540	549	448
18	591	2190	1190	563	1610	2230	1660	4530	2150	1520	541	433
19	580	1820	1080	570	1580	2050	1560	4190	2270	1420	517	423
20	605	1520	1010	832	1330	2010	1440	4070	2370	1330	553	416
21	705	1330	1070	1980	1200	2030	1430	4680	2260	1260	517	412
22	621	1210	1700	1280	1070	2030	1530	5300	2120	1140	553	398
23	594	1110	1900	1020	1010	2090	1750	6110	2110	1050	529	384
24	904	1040	4300	906	1030	2250	2020	5530	2250	989	497	377
25	759	983	2720	822	1350	2320	2320	5280	2520	944	473	374
26	669	928	2080	763	1650	2120	2750	5900	2710	905	473	367
27	626	918	1670	737	1710	1930	3710	5410	2620	886	505	363
28	609	1450	1360	698	1510	1790	4630	4100	2590	850	465	444
29	751	1280	1180	660	---	1710	5090	3020	2580	800	454	419
30	741	2280	1090	633	---	1630	5020	2790	2590	746	454	388
31	677	---	1080	610	---	1540	---	2970	---	719	489	---
TOTAL	23006	64097	52480	24800	52799	93930	66220	134720	96320	48809	17000	15912
MEAN	742	2137	1693	800	1886	3030	2207	4346	3211	1574	548	530
MAX	1230	8590	4300	1980	4000	11000	5090	6110	5730	2880	715	1160
MIN	580	647	1010	563	540	1050	1290	2790	2110	719	454	363
CFSM	2.09	6.02	4.77	2.25	5.31	8.54	6.22	12.2	9.05	4.43	1.54	1.49
IN.	2.41	6.72	5.50	2.60	5.53	9.84	6.94	14.12	10.09	5.11	1.78	1.67
AC-FT	45630	127100	104100	49190	104700	186300	131300	267200	191100	96810	33720	31560

CAL YR 1978 TOTAL 665333 MEAN 1823 MAX 8590 MIN 580 CFSM 5.14 IN 69.72 AC-FT 1320000
WTR YR 1979 TOTAL 690093 MEAN 1891 MAX 11000 MIN 363 CFSM 5.33 IN 72.31 AC-FT 1369000

12134500 SKYKOMISH RIVER NEAR GOLD BAR, WA

LOCATION.--Lat 47°50'15", long 121°39'56", in SW¼SW¼ sec.9, T.27 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on right bank 2.0 mi (3.2 km) southeast of Gold Bar, 7.3 mi (11.7 km) upstream from Wallace River, and at mile 43.0 (69.2 km).

DRAINAGE AREA.--535 mi² (1,386 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year.

REVISED RECORDS.--WSP 1316: 1932-35(M), 1944(M).

GAGE.--Water-stage recorder. Datum of gage is 209.26 ft (63.782 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good. No regulation. Some small diversions above station.

AVERAGE DISCHARGE.--51 years, 3,975 ft³/s (112.6 m³/s) 100.90 in/yr (2,563 mm/yr), 2,880,000 acre-ft/yr (3,550 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 88,700 ft³/s (2,510 m³/s) Dec. 21, 1933, gage height, 21.3 ft (6.49 m), from rating curve extended above 32,000 ft³/s (906 m³/s); minimum, 315 ft³/s (8.92 m³/s) Nov. 29, 1952; minimum gage height, 2.73 ft (0.832 m) Dec. 1, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 19,000 ft³/s (538 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0500	*24,700	700	*12.28	3.743	Mar. 6	0800	22,300	632	11.80	3.597
Nov. 8	0200	19,700	558	11.23	3.423						

Minimum discharge, 580 ft³/s (16.4 m³/s) Sept. 27, gage height, 3.50 ft (1.067 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2100	1040	3840	1380	840	2110	2170	8150	6530	5060	1170	765
2	1870	1070	2830	1270	810	1860	2080	7280	8100	5150	1160	1230
3	1690	4070	2770	1180	780	1700	1990	6990	8860	3720	1110	1760
4	1570	15300	4870	1110	854	3130	2420	8980	8650	3380	1070	1390
5	1460	5810	3780	1040	1590	12600	2920	9430	9870	3250	1020	1160
6	1360	3780	2830	990	3040	20400	3130	8830	8290	3350	976	1060
7	1290	5280	2380	950	5830	18500	2970	7160	5980	3230	939	950
8	1230	13000	2140	920	3410	10500	2970	5970	5200	3190	913	925
9	1190	6460	2060	980	5610	7010	3510	5390	5450	3160	891	1100
10	1230	4480	2000	1010	6250	5470	3250	4920	6210	4640	882	1220
11	1260	3480	2580	1020	5020	4850	2970	4600	7060	3690	878	1000
12	1160	2830	2480	1010	6390	4810	2810	4850	6750	3530	855	889
13	1090	2440	2110	990	7010	4620	4070	5210	5900	3030	842	819
14	1040	2150	2680	915	5320	4260	3910	6360	4630	2650	859	779
15	990	1950	2800	888	3800	4440	3150	7180	3910	2530	861	765
16	980	2540	2330	854	2940	4640	2770	8070	3810	2550	827	742
17	933	4750	2060	830	2540	4030	2720	7370	3800	2560	858	714
18	886	3800	1880	806	2530	3570	2590	7370	3450	2510	865	692
19	879	2990	1710	822	2340	3240	2420	6870	3650	2360	816	676
20	960	2480	1580	1320	2070	3150	2240	6680	3950	2230	868	664
21	1130	2190	1680	3130	1880	3200	2230	7650	3760	2110	812	658
22	970	1980	2620	1970	1700	3200	2370	8670	3520	1910	887	638
23	906	1830	2960	1600	1600	3300	2750	10000	3470	1750	852	615
24	1560	1700	7490	1420	1710	3580	3190	8980	3720	1640	788	604
25	1270	1600	4660	1280	2240	3710	3710	8650	4230	1560	754	596
26	1090	1510	3300	1190	2720	3360	4440	9880	4570	1510	749	587
27	1000	1490	2580	1140	2830	3000	6180	8980	4430	1480	781	583
28	960	2200	2120	1060	2450	2750	7700	6770	4330	1410	741	739
29	1210	1990	1800	1000	---	2630	8400	5280	4300	1320	725	686
30	1210	3530	1620	933	---	2530	8200	4580	4160	1240	721	636
31	1090	---	1490	880	---	2350	---	4960	---	1190	764	---
TOTAL	37564	109720	84030	35888	86104	158500	106230	222060	160540	82890	27234	25642
MEAN	1212	3657	2711	1158	3075	5113	3541	7163	5351	2674	879	855
MAX	2100	15300	7490	3130	7010	20400	8400	10000	9870	5150	1170	1760
MIN	879	1040	1490	806	780	1700	1990	4580	3450	1190	721	583
CFSM	2.27	6.84	5.07	2.16	5.75	9.56	6.62	13.4	10.0	5.00	1.64	1.60
IN.	2.61	7.63	5.84	2.50	5.99	11.02	7.39	15.44	11.16	5.76	1.89	1.78
AC-FT	74510	217600	166700	71180	170800	314400	210700	440500	318400	164400	54020	50860

CAL YR 1978 TOTAL 1120905 MEAN 3071 MAX 15300 MIN 879 CFSM 5.74 IN 77.94 AC-FT 2223000
WTR YR 1979 TOTAL 1136402 MEAN 3113 MAX 20400 MIN 583 CFSM 5.82 IN 79.02 AC-FT 2254000

12134500 SKYKOMISH RIVER NEAR GOLD BAR, WA--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-70, October 1977 to September 1978.

REMARKS.--Samples taken at site 0.7 mi (1.1 km) upstream from gaging station.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
23...	1325	897	54	6.7	8.9	5	1.0
NOV							
13...	1400	2620	48	6.9	4.0	10	2.0
DEC							
18...	1425	1860	43	6.6	4.3	10	2.0
JAN , 1979							
09...	1325	1040	55	6.6	3.4	0	2.0
FEB							
06...	1420	2160	39	7.2	2.9	20	25
MAR							
05...	1340	11900	24	6.8	3.7	40	16
APR							
09...	1340	3550	36	6.9	6.0	10	2.0
MAY							
14...	1340	6160	28	6.9	7.5	15	1.0
JUN							
25...	1355	3990	25	7.3	11.9	15	2.0
JUL							
16...	1400	2510	32	6.9	15.1	5	2.0
AUG							
27...	1300	798	49	7.0	15.1	20	1.0
SEP							
24...	1340	608	55	6.9	13.6	15	1.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
23...	11.4	.13	.03	.000	.00	.00
NOV						
13...	13.5	.28	.01	.000	.00	.00
DEC						
18...	12.8	.33	.01	.000	.00	.00
JAN , 1979						
09...	11.6	.36	.00	.000	.00	.00
FEB						
06...	13.6	.28	.03	.010	.00	.00
MAR						
05...	13.8	.24	.02	.020	.00	.00
APR						
09...	12.7	.17	.01	.010	.00	.00
MAY						
14...	12.4	.09	.05	.010	.00	.00
JUN						
25...	10.8	.04	.01	.000	.01	.03
JUL						
16...	--	.05	.02	.000	.01	.03
AUG						
27...	10.8	.30	.01	.010	.00	.00
SEP						
24...	10.5	.07	.00	.000	.04	.12

12137200 ELK CREEK NEAR SULTAN, WA

LOCATION.--Lat 47°58'14", long 121°33'12", in NW¼SW¼ sec.29, T.29 N., R.10 E., Snohomish County, Hydrologic Unit 17110009, on left bank, 250 ft (76 m) downstream from Boulder Creek, about 0.9 mi (1.4 km) above mouth, and 14.2 mi (22.8 km) northeast of Sultan.

DRAINAGE AREA.--11.4 mi² (29.5 km²).

PERIOD OF RECORD.--November 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage 1,600 ft (488 m), from topographic map.

REMARKS.--Records good except those for periods of intermittent gage-height record, Mar. 19 to June 11, which are fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,040 ft³/s (57.8 m³/s) Dec. 2, 1977, gage height, 7.20 ft (2.195 m); minimum, 8.7 ft³/s (0.246 m³/s) Aug. 18, 19, 20, 21, 22, 23, 1977, gage height, 0.97 ft (0.296 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,460 ft³/s (41.3 m³/s) Nov. 7, gage height, 6.37 ft (1.942 m); minimum, 9.0 ft³/s (0.255 m³/s) Sept. 25, 26; minimum gage height, 1.01 ft (0.308 m) Aug. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	28	81	28	18	47	46	225	169	215	19	15
2	48	60	58	26	17	39	44	192	182	222	18	72
3	39	335	90	24	17	35	47	175	186	130	17	82
4	34	474	130	22	20	347	68	330	179	111	16	50
5	30	131	81	20	55	866	73	308	371	98	15	33
6	27	85	59	19	127	838	76	302	174	96	15	27
7	24	477	48	18	157	679	72	242	127	89	14	20
8	22	451	42	17	99	246	82	159	113	100	14	25
9	22	152	39	16	307	150	95	147	132	106	13	59
10	30	95	39	16	185	123	78	132	145	217	13	47
11	41	69	96	18	144	121	70	116	155	113	13	28
12	29	55	67	17	214	132	68	131	144	131	13	21
13	23	45	49	16	325	121	120	139	128	98	12	17
14	20	39	61	15	150	123	105	128	89	77	13	15
15	18	35	53	14	91	148	74	200	75	74	13	13
16	17	178	45	14	64	141	57	240	89	72	12	13
17	17	274	39	13	54	101	59	171	90	66	12	12
18	16	122	35	13	57	82	58	172	81	61	12	11
19	15	81	32	13	48	74	56	169	113	53	12	11
20	36	60	30	96	39	76	54	161	132	48	12	10
21	33	50	29	132	34	78	54	177	99	43	12	10
22	21	44	43	62	31	80	68	194	86	34	13	10
23	25	39	65	44	28	85	96	262	84	32	13	9.9
24	99	35	281	36	31	90	107	191	104	30	12	9.7
25	41	32	109	30	73	82	125	182	129	28	11	9.2
26	29	29	70	27	113	72	155	252	125	26	11	9.0
27	24	35	54	25	93	64	214	198	114	26	11	10
28	25	56	44	23	60	58	250	141	114	24	10	24
29	42	44	38	21	---	57	278	104	96	21	10	15
30	36	107	35	20	---	55	196	94	144	20	9.9	13
31	29	---	31	19	---	50	---	125	---	19	11	---
TOTAL	973	3717	1973	874	2651	5260	2945	5759	3969	2480	401.9	700.8
MEAN	31.4	124	63.6	28.2	94.7	170	98.2	186	132	80.0	13.0	23.4
MAX	99	477	281	132	325	866	278	330	371	222	19	82
MIN	15	28	29	13	17	35	44	94	75	19	9.9	9.0
CFSM	2.75	10.9	5.58	2.47	8.31	14.9	8.61	16.3	11.6	7.02	1.14	2.05
IN.	3.17	12.13	6.44	2.85	8.65	17.16	9.61	18.79	12.95	8.09	1.31	2.29
AC-FT	1930	7370	3910	1730	5260	10430	5840	11420	7870	4920	797	1390

CAL YR 1978 TOTAL 32690.0 MEAN 89.6 MAX 620 MIN 11 CFSM 7.86 IN 106.66 AC-FT 64840
WTR YR 1979 TOTAL 31703.7 MEAN 86.9 MAX 866 MIN 9.0 CFSM 7.62 IN 103.45 AC-FT 62880

12137260 WILLIAMSON CREEK NEAR SULTAN, WA

LOCATION.--Lat 47°59'09", long 121°36'00", in NW¼SW¼ sec.24, T.29 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, on left bank, 0.4 mi (0.6 km) upstream from mouth, and 13.0 mi (20.9 km) northeast of Sultan.

DRAINAGE AREA.--15.6 mi² (40.4 km²).

PERIOD OF RECORD.--November 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,400 ft (427 m), from topographic map.

REMARKS.--Records fair. No regulation or diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,240 ft³/s (91.8 m³/s) Nov. 25, 1977, gage height, 6.64 ft (2.024 m); minimum, 12 ft³/s (0.34 m³/s) Jan. 17, 18, 1979, result of freezeup; minimum gage height, 1.06 ft (0.323 m) Jan. 10, 11, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,840 ft³/s (52.1 m³/s) Nov. 3, gage height, 5.46 ft (1.664 m); minimum daily discharge, 12 ft³/s (0.34 m³/s) Jan. 17, 18, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	64	113	41	38	93	82	239	157	271	43	30
2	87	98	90	36	36	82	77	217	186	258	42	75
3	76	506	147	32	36	77	81	217	197	159	41	109
4	68	615	159	28	47	531	123	335	183	133	40	90
5	63	217	113	25	119	980	133	353	321	119	37	71
6	58	147	91	23	242	1140	137	361	277	115	36	63
7	54	451	77	21	214	899	127	271	189	107	34	53
8	50	443	69	19	171	395	147	228	145	111	33	64
9	50	219	67	17	447	258	173	200	140	117	32	197
10	57	149	69	17	277	208	137	171	149	225	32	129
11	61	117	205	19	268	197	123	152	161	159	32	86
12	53	97	119	17	346	203	121	149	149	307	31	69
13	47	84	93	15	399	186	219	154	157	189	30	58
14	44	72	115	14	236	183	164	181	121	133	31	51
15	41	66	97	13	164	211	125	203	99	117	30	46
16	39	364	81	13	129	194	111	214	101	113	29	43
17	37	343	71	12	113	154	117	186	97	111	30	40
18	35	191	64	12	131	133	115	176	90	107	30	37
19	34	142	58	13	111	129	111	171	97	101	30	35
20	50	111	55	176	91	135	101	173	117	95	29	34
21	47	95	58	222	79	137	103	183	105	86	29	32
22	41	82	95	111	71	140	119	211	95	74	35	31
23	39	72	135	88	67	152	140	219	90	64	37	30
24	76	66	290	74	71	161	149	194	95	60	33	29
25	55	60	135	64	125	149	159	194	111	58	31	28
26	47	55	103	58	178	127	200	228	121	58	29	27
27	44	60	86	55	152	113	258	225	119	58	28	28
28	45	74	71	50	113	105	261	176	119	55	27	39
29	78	67	61	46	---	101	261	137	117	51	26	32
30	68	157	54	42	---	99	252	121	171	47	26	30
31	64	---	47	40	---	90	---	129	---	45	27	---
TOTAL	1709	5284	3088	1413	4471	7762	4426	6368	4276	3703	1000	1686
MEAN	55.1	176	99.6	45.6	160	250	148	205	143	119	32.3	56.2
MAX	101	615	290	222	447	1140	261	361	321	307	43	197
MIN	34	55	47	12	36	77	77	121	90	45	26	27
CFSM	3.53	11.3	6.39	2.92	10.3	16.0	9.49	13.1	9.17	7.63	2.07	3.60
IN.	4.08	12.60	7.36	3.37	10.66	18.51	10.55	15.18	10.20	8.83	2.38	4.02
AC-FT	3390	10480	6130	2800	8870	15400	8780	12630	8480	7340	1980	3340

CAL YR 1978 TOTAL 46771 MEAN 128 MAX 657 MIN 34 CFSM 8.21 IN 111.52 AC-FT 92770
WTR YR 1979 TOTAL 45186 MEAN 124 MAX 1140 MIN 12 CFSM 7.95 IN 107.74 AC-FT 89630

12137300 SPADA LAKE NEAR STARTUP, WA

LOCATION.--Lat 47°58'28", long 121°41'10", in NW¼ sec.29, T.29 N., R.9 E., Snohomish County, Hydrologic Unit 17110009, Snoqualmie National Forest, on right bank at Culmback Dam on Sultan River, 1.7 mi (2.7 km) downstream from South Fork, 7.8 mi (12.6 km) north of Startup and at mile 16.5 (26.5 km).

DRAINAGE AREA.--68.3 mi^2 (176.9 km^2).

PERIOD OF RECORD.--April 1965 to current year.

REVISED RECORDS.--The maximum observed contents and elevation for water year 1976 and also maximum for period of record, has been revised to 41,010 acre-ft (50.6 hm^3) Dec. 2, 1975, elevation, 1,367.9 (416.94 m) superseding figures published in the report for 1976.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Snohomish County P.U.D. No. 1).

REMARKS.--Reservoir is formed by earth-fill dam completed to elevation 1,408 ft (429.16 m) in 1965; storage began Apr. 5, 1965. Capacity, 34,500 acre-ft (42.5 hm^3) between elevations 1,250 ft (381.0 m) and 1,360 ft (414.5 m), crest of spillway. No dead storage. Figures given herein represent total contents. Spada Lake is used to regulate the flow of the Sultan River to supplement city of Everett water supply.

COOPERATION.--Elevations furnished by city of Everett.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 41,010 acre-ft (50.6 hm^3) Dec. 2, 1975, elevation, 1,367.9 ft (416.94 m); minimum observed since reservoir was first filled, 4,250 acre-ft (5.24 hm^3) Sept. 30, 1967, elevation, 1,301.28 ft (396.630 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 37,380 acre-ft (46.1 hm^3) Mar. 6, elevation, 1,363.6 ft (415.63 m); minimum observed, 19,640 acre-ft (24.2 hm^3) Sept. 30, elevation, 1,338.4 ft (407.94 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,360.1	34,580	-----
Oct. 31	1,351.5	28,050	-6,530
Nov. 30	1,360.0	34,500	+6,450
Dec. 31	1,359.0	33,700	-800
CAL YR 1978	-	-	+1,600
Jan. 31	1,348.5	25,950	-7,750
Feb. 28	1,360.4	34,820	+8,870
Mar. 31	1,360.0	34,500	-320
Apr. 30	1,360.9	35,220	+720
May 31	1,360.5	34,900	-320
June 30	1,360.6	34,980	+80
July 31	1,357.4	32,420	-2,560
Aug. 31	1,344.4	23,240	-9,180
Sept. 30	1,338.0	19,400	-3,840
WTR YR 1979	-	-	-15,180

12138150 SULTAN RIVER BELOW CHAPLAIN CREEK NEAR SULTAN, WA

LOCATION.--Lat 47°54'52", long 121°48'36", in NE¼SW¼ sec.17, T.28 N., R.8 E., Snohomish County, Hydrologic Unit 17110009, on right bank, 0.8 mi (1.3 km) downstream from Chaplain Creek, 3.5 mi (5.6 km) north of Sultan, at river mi 5.1 (8.2 km).

DRAINAGE AREA.--92.6 mi² (239.8 km²).

PERIOD OF RECORD.--November 1974 to current year..

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 320 ft (98 m) from topographic map.

REMARKS.--Records good. City of Everett diverted about 127 ft³/s (3.60 m³/s) daily into Lake Chaplain for municipal use. Flow regulated at Spada Lake since Apr. 5, 1965.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,600 ft³/s (697 m³/s) Dec. 2, 1975, gage height, 13.19 ft (4.020 m); minimum, 53 ft³/s (1.50 m³/s) Aug. 16, 17, 18, 20, 1977, gage height, 2.41 ft (0.735 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,070 ft³/s (172 m³/s) Mar. 5, gage height, 7.97 ft (2.429 m); minimum, 65 ft³/s (1.84 m³/s) on part or all of each day Aug. 26-28, gage height, 2.47 ft (0.753 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	315	236	952	325	263	588	283	1070	602	1150	108	96
2	301	257	708	320	262	469	279	1010	781	1630	92	104
3	270	370	847	332	264	362	297	890	849	893	90	130
4	249	1190	1430	342	267	930	952	1210	788	583	89	131
5	236	1330	996	340	416	5100	1020	1510	1120	454	88	124
6	241	824	644	332	656	5100	810	1620	1100	385	88	105
7	236	1090	457	322	677	4800	671	1320	793	354	88	78
8	236	3180	366	315	566	2710	604	1010	560	335	87	148
9	241	1390	361	315	721	1010	1210	859	504	364	85	277
10	249	817	367	351	1370	1720	952	719	558	753	85	138
11	249	579	661	372	1540	1120	639	603	645	697	85	104
12	241	459	724	393	2060	426	508	528	629	747	85	85
13	236	350	466	402	2340	355	1010	559	577	721	87	85
14	253	297	523	388	1600	310	937	708	476	493	103	116
15	257	310	653	363	1030	755	597	822	357	385	115	151
16	245	1910	447	333	762	998	426	916	308	342	116	157
17	232	2360	337	315	690	749	400	872	339	297	132	162
18	228	1370	313	301	749	579	442	765	303	251	141	162
19	224	859	331	302	712	448	446	733	306	227	137	153
20	320	585	354	454	538	365	372	679	398	190	135	114
21	283	420	376	657	419	345	309	740	408	167	131	168
22	241	345	466	497	363	345	294	828	345	162	140	168
23	245	292	556	457	352	360	366	992	294	172	145	154
24	257	279	2130	411	405	405	464	850	273	179	71	147
25	241	274	1240	372	742	420	539	780	312	166	73	139
26	236	283	743	362	1230	375	672	927	387	136	66	139
27	232	317	536	352	1180	301	954	1030	380	135	65	139
28	241	467	392	330	803	253	1190	800	360	129	70	141
29	257	388	327	310	---	228	1170	593	350	125	79	145
30	245	826	316	289	---	395	1110	464	423	120	90	155
31	236	---	322	270	---	315	---	445	---	120	98	---
TOTAL	7773	23654	19301	11224	22957	33516	19983	26844	15583	12862	3064	4115
MEAN	251	788	623	362	820	1081	666	866	519	415	98.8	137
MAX	320	3180	2130	657	2340	5100	1210	1620	1180	1630	145	277
MIN	224	236	313	270	262	228	279	445	273	120	65	78
AC-FT	15420	46920	38280	22260	45540	66480	39640	53250	30910	25510	6080	8160

CAL YR 1978 TOTAL 193875 MEAN 531 MAX 3790 MIN 83 AC-FT 384600
WTR YR 1979 TOTAL 200876 MEAN 550 MAX 5100 MIN 65 AC-FT 398400

12141100 SKYKOMISH RIVER AT MONROE, WA

LOCATION.--Lat 47°51'08", long 121°57'29", in SE¼SW¼ sec.6, T.27 N., R.7 E., Snohomish County, Hydrologic unit 17110009, at State Highway 203 bridge at Monroe, 0.1 mi (0.2 km) downstream from Woods Creek and at mile 25.0 (40.2 km).

DRAINAGE AREA.--834 mi² (2,160 km²).

PERIOD OF RECORD.--Water years 1965-69, 1974, 1977 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1966 to June 1969.
WATER TEMPERATURES: October 1966 to June 1969.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
23...	1240	1370	50	7.6	9.5	15	1.0
NOV							
13...	1310	3550	46	7.2	3.8	10	2.0
DEC							
18...	1340	3280	44	7.1	3.8	15	3.0
JAN , 1979							
09...	1240	1850	40	7.2	1.5	5	3.0
FEB							
06...	1330	3100	40	7.2	2.9	25	9.0
MAR							
05...	1300	20200	26	6.5	3.8	55	34
APR							
09...	1250	6700	35	7.3	6.3	25	3.0
MAY							
14...	1255	7900	28	7.2	9.3	15	2.0
JUN							
25...	1235	4750	28	7.3	13.4	5	2.0
JUL							
16...	1250	3280	32	7.4	16.6	10	2.0
AUG							
27...	1215	980	48	7.4	17.8	15	1.0
SEP							
24...	1300	830	54	7.3	15.5	25	1.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
23...	12.2	.09	.01	.000	.00	.00
NOV						
13...	13.6	.27	.01	.000	.00	.00
DEC						
18...	13.0	.40	.01	.000	.01	.03
JAN , 1979						
09...	14.3	.30	.00	.010	.00	.00
FEB						
06...	13.5	.33	.01	.010	.00	.00
MAR						
05...	13.8	.24	.03	.030	.00	.00
APR						
09...	12.6	.22	.01	.010	.00	.00
MAY						
14...	12.3	.09	.01	.010	.00	.00
JUN						
25...	10.9	.05	.01	.010	.01	.03
JUL						
16...	9.0	.05	.01	.000	.01	.03
AUG						
27...	9.2	.05	.01	.010	.00	.00
SEP						
24...	10.4	.08	.01	.000	.00	.00

12141300 MIDDLE FORK SNOQUALMIE RIVER NEAR TANNER, WA

LOCATION.--Lat 47°29'10", long 121°38'48", in SW¼SE¼ sec.10, T.23 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.7 mi (1.1 km) downstream from Granite Creek, 6.4 mi (10.3 km) east of North Bend, and at mile 55.6 (89.5 km).

DRAINAGE AREA.--154 mi^2 (399 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1961 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Altitude of gage is 780 ft (238 m), from topographic map.

REMARKS.--Water-discharge records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--18 years, 1,281 ft^3/s (36.28 m^3/s) 112.96 in/yr (2,869 mm/yr), 928,100 acre-ft/yr (1,144 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,200 ft^3/s (855 m^3/s) Dec. 2, 1977, gage height, 14.93 ft (4.551 m); minimum, 130 ft^3/s) (3.68 m^3/s) Oct. 25, 26, 27, 1974, gage height, 1.04 ft (0.317 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 23, 1959, reached a stage of 18.7 ft (5.70 m), from floodmarks, discharge, 49,000 ft^3/s (1,390 m^3/s) by slope-area measurement at site 6 miles (9.7 km) downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,000 ft^3/s (227 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 4	0500	8,950	253	8.68	2.646	Mar. 7	0400	8,770	248	8.61	2.624
Nov. 8	0300	*9,360	265	*8.84	2.694						

Minimum discharge, 151 ft^3/s (4.28 m^3/s) on Sept. 25, 26, gage height, 1.18 ft (0.360 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	539	296	1770	420	290	715	612	2160	1650	1660	331	245
2	477	310	1140	390	285	612	612	1920	2120	1710	332	408
3	427	1050	1820	370	280	561	624	1890	2370	1110	311	755
4	396	4810	3240	345	308	1350	1410	2510	2250	1010	298	595
5	366	1500	1610	320	885	5100	1520	2690	2470	947	279	419
6	337	951	1140	305	2330	7420	1290	2610	2040	969	268	360
7	319	1260	890	290	2860	6930	1220	1970	1400	919	259	308
8	307	4980	768	280	1370	2990	1050	1590	1220	879	250	291
9	296	1800	762	270	2840	1870	1100	1410	1320	899	245	360
10	315	1210	824	300	2330	1460	1050	1270	1570	1320	243	406
11	297	900	1560	346	1860	1320	968	1200	1820	1050	245	317
12	279	742	1170	365	2400	1340	893	1280	1690	1040	239	272
13	263	633	862	373	2320	1250	1380	1510	1440	861	232	247
14	249	558	1010	327	1560	1200	1210	1910	1120	750	234	232
15	239	505	914	308	1110	1330	974	2100	914	714	236	227
16	231	1070	752	294	893	1330	856	2260	870	751	234	219
17	227	2540	655	282	784	1100	849	1940	897	768	239	205
18	220	1410	590	270	841	950	807	1960	828	762	241	194
19	212	1020	539	287	769	865	762	1760	965	690	226	187
20	293	794	500	747	664	855	694	1810	1080	642	242	183
21	339	675	657	1790	604	875	680	2120	992	617	225	181
22	270	599	1230	859	542	880	770	2540	881	554	232	174
23	243	542	1230	618	510	905	899	2750	898	491	224	164
24	404	499	3390	526	569	984	1020	2290	990	457	202	158
25	352	465	1510	456	906	978	1150	2250	1150	433	192	153
26	293	429	1020	409	1260	855	1410	2570	1230	415	185	151
27	264	468	825	394	1180	765	1920	2060	1180	408	193	155
28	256	1220	655	366	886	705	2210	1580	1190	393	190	214
29	376	887	554	334	---	656	2280	1210	1180	365	182	187
30	374	2580	499	312	---	656	2210	1040	1250	335	184	169
31	320	---	460	297	---	660	---	1180	---	321	232	---
TOTAL	9840	37283	34554	13250	33436	49487	34430	59340	40983	24242	7425	8216
MEAN	317	1243	1115	427	1194	1596	1148	1914	1366	782	240	274
MAX	539	4980	3390	1790	2860	7420	2280	2750	2470	1710	332	755
MIN	212	296	460	270	280	561	612	1040	828	321	182	151
CFSM	2.06	8.07	7.24	2.77	7.75	10.4	7.46	12.4	8.87	5.08	1.56	1.78
IN.	2.38	9.01	8.35	3.20	8.08	11.95	8.32	14.33	9.90	5.86	1.79	1.98
AC-FT	19520	73950	68540	26280	66320	98160	68290	117700	81290	48080	14730	16300

CAL YR 1978 TOTAL 329669 MEAN 903 MAX 4980 MIN 212 CFSM 5.86 IN 79.59 AC-FT 653500
WTR YR 1979 TOTAL 352486 MEAN 966 MAX 7420 MIN 151 CFSM 6.27 IN 85.15 AC-FT 699200

12141300 MIDDLE FORK SNOQUALMIE RIVER NEAR TANNER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965-69, May to September 1979.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May to September 1979.

INSTRUMENTATION.--Temperature recorder for period of daily record.

REMARKS.--Unpublished sediment records water years, 1965-69 are available in files of district office. Records represent water temperatures at sensor within 0.5°C.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE; Maximum recorded, 18.5°C July 20, 31, Aug. 10; minimum recorded, 5.0°C May 28, 29.

TEMPERATURE (DEG °C) OF WATER MAY TO SEPTEMBER 1979

TEMPERATURE (DEG °C) OF WATER MAY 1979

DAY	MAX	MIN	MEAN	DAY	MAX	MIN	MEAN	DAY	MAX	MIN	MEAN
24	9.0	6.5	7.5	27	7.0	5.5	6.5	30	11.0	5.5	8.0
25	10.5	6.0	8.0	28	6.5	5.0	5.5	31	12.0	7.0	9.5
26	8.0	6.5	7.0	29	8.5	5.0	6.5				

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.0	7.0	9.5	9.5	8.0	8.5	17.5	15.5	16.5	15.5	14.0	14.5
2	12.0	7.0	9.0	10.5	7.5	9.0	18.0	15.0	16.5	14.0	13.0	13.5
3	11.0	7.0	9.0	13.5	8.0	10.5	17.0	14.0	15.0	13.0	12.0	12.0
4	10.0	8.0	9.0	12.0	10.0	11.0	16.5	12.0	14.5	13.0	11.5	12.5
5	8.5	7.5	8.0	14.0	10.0	12.0	17.0	14.0	15.5	12.5	11.5	12.0
6	7.5	6.5	7.0	13.5	10.5	12.0	17.0	14.0	16.0	14.0	12.0	13.0
7	10.5	6.0	8.0	13.5	10.5	12.0	17.5	14.0	16.0	16.0	12.5	14.5
8	12.0	7.0	9.0	15.0	11.0	13.0	17.5	14.0	16.0	15.5	14.0	14.5
9	12.0	7.5	10.0	14.0	11.5	13.0	18.0	14.5	16.5	13.5	12.5	13.0
10	12.5	8.0	10.5	13.0	11.0	11.5	18.5	15.0	17.0	14.0	11.5	12.5
11	12.5	8.5	10.5	12.0	10.5	11.0	18.0	15.0	16.5	14.0	11.5	13.0
12	12.0	8.0	10.0	11.5	10.5	11.0	18.0	14.5	16.5	14.0	11.5	13.0
13	10.0	8.0	9.0	13.5	9.5	11.5	17.5	15.5	16.5	14.5	12.0	13.5
14	10.0	7.5	8.5	15.0	10.0	12.5	16.5	15.0	15.5	15.5	13.0	14.0
15	11.0	7.5	9.0	16.0	11.0	13.5	18.0	14.0	15.5	15.0	13.5	14.0
16	10.5	8.5	9.5	17.0	12.0	14.5	17.5	15.0	16.0	15.0	13.5	14.5
17	9.5	8.0	8.5	17.5	12.5	15.0	16.5	15.0	15.5	15.0	12.5	14.0
18	8.5	8.0	8.0	17.5	13.0	15.5	15.0	14.0	14.5	15.0	12.5	14.0
19	8.5	8.0	8.0	18.0	13.5	15.5	14.5	13.5	14.0	15.0	13.5	14.5
20	11.5	7.5	9.0	18.5	13.5	16.0	16.0	13.0	14.5	15.0	14.0	14.5
21	9.5	8.0	9.0	17.0	14.0	15.0	16.0	15.0	15.5	15.5	13.5	14.5
22	11.0	8.0	9.5	16.5	13.0	14.5	16.5	14.0	15.5	15.0	14.0	14.5
23	13.5	8.5	11.0	17.0	13.0	15.0	16.0	14.5	15.5	14.5	12.5	13.5
24	14.0	9.0	11.5	17.5	13.5	15.5	17.0	14.0	15.5	14.5	12.0	13.5
25	14.5	9.5	12.0	17.5	13.5	15.5	17.5	15.0	16.5	14.5	12.5	13.5
26	14.5	10.0	12.0	18.0	14.5	16.5	18.0	15.0	16.5	14.5	14.0	14.0
27	14.5	10.0	12.0	18.0	14.5	16.5	17.5	15.5	16.0	14.0	13.0	13.5
28	15.0	10.5	12.5	17.0	14.0	15.0	17.0	14.5	15.5	14.0	12.5	13.5
29	13.0	10.0	10.5	16.5	12.5	14.5	17.0	16.0	16.5	13.0	11.5	12.0
30	10.0	9.5	9.5	17.5	13.5	15.5	17.0	14.5	15.5	13.5	11.5	12.5
31	---	---	---	18.5	14.5	16.5	15.5	13.5	14.5	---	---	---
MONTH	15.0	6.0	9.5	18.5	7.5	13.5	18.5	12.0	15.5	16.0	11.5	13.5

12142000 NORTH FORK SNOQUALMIE RIVER NEAR SNOQUALMIE FALLS, WA

LOCATION.--Lat 47°36'54", long 121°42'44", in NW¼NW¼ sec.31, T.25 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi (1.0 km) upstream from Calligan Creek, 7.0 mi (11.3 km) northeast of town of Snoqualmie Falls, and at mile 9.2 (14.8 km).

DRAINAGE AREA.--64.0 mi² (165.8 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1929 to October 1949, water years 1950-60 (annual maximum), February 1961 to current year.

REVISED RECORDS.--WSP 1346: 1930-31(M), 1932, 1935, 1936-37(M), 1938, 1939-42(M), 1944, 1945-46(P), 1947, 1948(P), 1949(M). WSP 1736: 1932-34(M), 1935, 1938(M), 1943-45(M), 1947(M), drainage area. WSP 1932: 1950-54(M), 1956-57(M), 1959(M).

GAGE.--Water-stage recorder. Altitude of gage is 1,130 ft (344 m), from topographic map. Prior to Oct. 19, 1949, water-stage recorder, and October 1949 to February 1951, crest-stage gage, at site 1,500 ft (460 m) downstream at different datum.

REMARKS.--Water-discharge records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--38 years (water years 1930-49, 1962-79), 502 ft³/s (14.22 m³/s) 106.52 in/yr (2,706 mm/yr), 363,700 acre-ft/yr (448 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,800 ft³/s (447 m³/s) Feb. 26, 1932, gage height, 17.5 ft (5.33 m), site and datum then in use, from rating curve extended above 2,200 ft³/s (62.3 m³/s) on basis of slope-area measurement at gage height 16.47 ft (5.020 m); minimum observed, 30 ft³/s (0.85 m³/s) Sept. 17-19, 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 8	0200	*4,180	118	*7.93	2.417

Minimum discharge, 54 ft³/s (1.53 m³/s) on all or part of each day Sept. 25-27, gage height, 1.88 ft (0.573 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	242	145	727	170	140	324	240	826	624	640	96	74
2	213	149	472	161	136	273	237	755	751	875	96	126
3	193	1100	699	154	134	255	240	730	788	456	93	184
4	178	1940	1350	147	146	720	630	1130	722	390	91	142
5	164	583	648	141	351	2460	740	1150	898	345	87	119
6	153	388	460	136	1030	2860	625	1090	687	340	83	116
7	143	582	363	132	1430	2350	578	814	460	314	80	102
8	136	2030	311	128	640	1120	500	655	416	321	78	99
9	130	670	314	125	1560	715	569	574	463	335	75	120
10	145	443	331	170	1150	574	488	516	546	594	73	126
11	134	334	656	205	886	556	452	484	605	432	71	103
12	123	277	468	188	1190	565	464	516	542	428	69	91
13	115	240	351	183	1260	512	725	578	450	310	68	85
14	110	214	374	164	755	504	556	710	339	263	67	80
15	105	198	346	153	524	620	440	766	284	255	67	76
16	101	549	285	144	424	601	382	844	275	255	67	73
17	98	1460	254	137	379	468	396	710	300	246	68	71
18	95	646	237	131	412	396	365	690	269	231	69	69
19	91	452	215	139	361	365	333	615	364	210	68	68
20	147	360	203	482	300	368	300	640	404	193	68	66
21	171	287	233	1120	267	379	294	735	330	180	68	64
22	126	254	353	458	242	372	347	850	287	159	70	61
23	114	229	392	325	227	389	416	892	281	147	72	59
24	303	210	1900	273	247	424	480	738	337	138	68	57
25	201	198	711	238	472	406	520	740	408	130	64	56
26	159	184	462	216	660	340	630	897	426	125	61	54
27	138	204	368	205	560	302	844	711	392	119	64	55
28	131	551	283	188	408	276	904	553	400	113	64	77
29	101	362	238	168	---	263	922	428	375	109	60	72
30	167	1130	211	155	---	252	850	366	407	102	59	66
31	159	---	185	148	---	260	---	427	---	101	64	---
TOTAL	4684	16377	14400	6884	16291	20269	15467	22130	13828	8855	2248	2611
MEAN	151	546	465	222	582	654	516	714	461	286	72.5	87.0
MAX	303	2030	1900	1120	1560	2860	922	1150	898	875	96	184
MIN	91	145	185	125	134	252	237	366	269	101	59	54
CFSM	2.36	8.53	7.27	3.47	9.09	10.2	8.06	11.2	7.20	4.47	1.13	1.36
IN.	2.72	9.52	8.37	4.00	9.47	11.78	8.99	12.86	8.04	5.15	1.31	1.52
AC-FT	9290	32480	28560	13650	32310	40200	30680	43890	27430	17570	4460	5180

CAL YR 1978 TOTAL 136341 MEAN 374 MAX 2030 MIN 62 CFSM 5.84 IN 79.25 AC-FT 270400
WTR YR 1979 TOTAL 144045 MEAN 395 MAX 2860 MIN 54 CFSM 6.17 IN 83.72 AC-FT 285700

12142000 NORTH FORK SNOQUALMIE RIVER NEAR SNOQUALMIE FALLS, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965-69, June to September 1979.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: June to September 1979.

INSTRUMENTATION.--Temperature recorder for period of daily record.

REMARKS.--Unpublished sediment records water years 1965-69 are available in files of district office. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum recorded, 21.0°C July 31; minimum recorded, 6.5°C June 7.

TEMPERATURE (DEG °C) OF WATER JUNE TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.0	7.5	10.0	9.5	8.0	8.5	18.0	15.5	16.5	15.5	14.0	14.5
2	13.0	7.5	10.0	10.5	8.0	9.0	18.5	14.0	16.0	14.5	13.5	14.0
3	12.5	8.0	10.0	14.0	8.0	11.0	17.0	14.5	15.5	14.0	12.5	13.0
4	10.0	8.5	9.5	12.0	10.5	11.0	18.0	11.5	14.5	14.0	12.5	13.0
5	9.0	7.5	8.5	15.0	10.0	12.0	18.5	13.0	15.5	13.0	12.0	12.5
6	9.0	7.0	7.5	14.5	10.5	12.5	18.5	13.5	16.0	15.0	11.5	13.0
7	11.5	6.5	9.0	15.0	11.0	13.0	19.0	13.0	16.0	16.0	11.0	13.5
8	13.0	7.0	10.0	16.0	11.5	14.0	19.0	13.0	16.0	15.5	13.5	14.5
9	13.5	8.0	11.0	15.5	12.0	13.5	20.0	13.5	16.5	14.0	12.5	13.5
10	14.0	9.0	11.5	13.0	11.5	12.0	20.0	14.0	17.0	15.5	10.5	13.0
11	14.0	9.0	11.5	12.0	10.5	11.5	19.5	14.0	16.5	16.0	11.0	13.5
12	13.5	9.0	11.0	13.0	10.5	11.5	19.5	13.5	16.5	16.5	11.0	13.5
13	12.0	9.0	10.0	14.0	9.5	12.0	18.5	14.5	16.5	17.0	11.5	14.0
14	12.0	8.0	10.0	16.0	10.0	13.0	16.5	15.0	15.5	18.0	13.0	15.0
15	11.0	8.0	9.5	17.5	11.0	14.5	19.0	14.0	16.0	16.5	13.5	15.0
16	11.0	8.5	10.0	18.5	12.0	15.0	17.0	14.5	16.0	15.5	13.5	14.5
17	9.5	8.5	9.0	19.5	13.0	16.5	17.0	15.5	16.0	16.5	12.0	14.0
18	9.0	8.5	8.5	20.0	14.0	17.0	15.5	13.5	14.5	16.0	12.0	14.0
19	8.5	8.0	8.5	20.0	14.0	17.0	14.5	12.5	13.5	15.0	13.0	13.5
20	11.0	8.0	9.0	20.5	14.5	17.5	16.5	13.0	14.5	14.5	13.5	14.0
21	10.5	8.0	9.5	17.5	14.5	15.5	16.0	15.0	15.5	15.5	13.0	14.0
22	11.5	8.5	10.0	17.5	12.5	15.0	16.5	13.5	15.0	15.0	13.0	14.0
23	14.5	8.5	11.5	18.5	13.0	15.5	17.0	13.5	15.0	14.5	11.0	13.0
24	15.5	9.0	12.5	19.5	13.5	16.0	17.0	13.0	15.0	15.0	10.5	13.0
25	16.0	10.0	13.0	20.0	14.0	17.0	18.5	13.5	16.0	15.5	11.5	13.5
26	16.0	10.0	13.0	20.5	14.5	17.5	19.0	14.0	16.5	15.5	13.5	14.5
27	16.0	10.5	13.0	20.0	14.5	17.0	17.0	15.0	15.5	14.0	12.0	13.5
28	16.0	10.5	13.5	16.5	14.0	15.0	16.0	14.5	15.0	15.0	11.5	13.0
29	13.5	11.0	11.5	18.5	12.5	15.0	16.5	15.0	15.5	13.0	11.0	12.0
30	11.0	9.5	10.5	20.0	13.0	16.5	16.0	14.0	15.0	14.0	10.5	12.0
31	---	---	---	21.0	11.0	17.0	16.5	13.5	14.5	---	---	---
MONTH	16.0	6.5	10.5	21.0	8.0	14.0	20.0	11.5	15.5	18.0	10.5	13.5

12143400 SOUTH FORK SNOQUALMIE RIVER ABOVE ALICE CREEK, NEAR GARCIA, WA

LOCATION.--Lat 47°24'55", long 121°35'10", in SW¼SW¼ sec.6, T.22 N., R.10 E., King County, Hydrologic Unit 17110010, Snoqualmie National Forest, on left bank 0.4 mi (0.6 km) upstream from Alice Creek, 1.5 mi (2.4 km) southeast of Garcia, 11 mi (17.7 km) southeast of North Bend, and at mile 17.3 (27.8 km).

DRAINAGE AREA.--41.6 mi² (107.7 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,447.67 ft (441.250 m) Washington Highway Department datum.

REMARKS.--Water-discharge records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--19 years, 305 ft³/s (8.638 m³/s), 99.56 in/yr (2,529 mm/yr), 221,000 acre-ft/yr (272 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,090 ft³/s (201 m³/s) Nov. 19, 1962, gage height, 11.96 ft (3.645 m); minimum, 25 ft³/s (0.71 m³/s) Oct. 25, 26, 27, 1974, gage height, 0.99 ft (0.302 m); minimum gage height, 0.11 ft (0.034 m) part of each day Sept. 25-27, 1979.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in November and December 1959 reached stages of 14.7 ft (4.48 m) and 13.4 ft (4.08 m) respectively, from flood marks, discharges not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0300	1,590	45.0	2.90	0.884	Mar. 7	0400	1,640	46.4	2.96	0.902
Nov. 7	2400	*1,850	52.4	*3.17	0.966						

Minimum discharge, 32 ft³/s (0.906 m³/s) on part of each day Sept. 25-27, gage height, 0.11 ft (0.034 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	121	63	436	102	71	142	178	744	517	321	58	48
2	111	69	308	95	70	126	175	688	601	283	56	92
3	102	356	464	88	69	121	166	653	634	208	55	123
4	92	800	758	83	76	230	314	793	589	195	53	104
5	86	304	431	78	175	674	375	800	608	185	52	73
6	80	212	317	74	343	1410	343	765	505	182	50	66
7	76	325	256	71	559	1400	312	608	356	169	49	56
8	75	786	222	68	291	779	296	511	338	160	48	54
9	73	356	205	65	565	541	296	464	361	154	47	66
10	75	252	188	75	535	431	275	425	415	219	46	66
11	68	198	263	88	469	385	260	425	453	166	45	56
12	64	169	212	88	571	390	252	464	390	178	43	50
13	61	148	178	82	505	370	390	559	338	145	43	46
14	58	131	275	76	356	347	329	653	260	131	43	43
15	56	121	230	75	267	380	271	709	226	126	43	42
16	56	182	191	71	222	375	244	730	226	121	44	41
17	55	395	169	69	195	325	237	653	219	118	46	39
18	53	275	154	68	201	296	219	668	201	112	44	38
19	52	222	140	71	175	279	205	583	226	105	44	37
20	64	182	129	113	151	279	191	601	222	99	45	37
21	64	163	151	190	137	283	198	688	208	96	43	37
22	55	148	252	134	123	283	226	765	198	86	45	36
23	53	134	237	113	118	296	267	786	205	81	42	35
24	106	126	442	104	118	325	325	674	215	78	40	34
25	71	118	296	95	172	325	370	667	237	75	38	33
26	61	109	226	90	201	279	469	716	233	72	38	33
27	56	118	198	86	198	252	640	565	222	69	51	34
28	59	263	163	82	166	226	737	436	215	66	40	41
29	82	233	140	78	---	208	793	343	201	63	38	36
30	75	621	121	75	---	198	751	312	237	60	38	34
31	68	---	111	73	---	191	---	375	---	58	47	---
TOTAL	2228	7579	7863	2720	7099	12146	10104	18815	9856	4179	1414	1530
MEAN	71.9	253	254	87.7	254	392	337	607	329	135	45.6	51.0
MAX	121	800	758	190	571	1410	793	800	634	321	58	123
MIN	52	63	111	65	69	121	166	312	198	58	38	33
CFSM	1.73	6.08	6.11	2.11	6.11	9.42	8.10	14.6	7.91	3.25	1.10	1.23
IN.	1.99	6.78	7.03	2.43	6.35	10.86	9.04	16.82	8.81	3.74	1.26	1.37
AC-FT	4420	15030	15600	5400	14080	24090	20040	37320	19550	8290	2800	3030

CAL YR 1978 TOTAL 76902 MEAN 211 MAX 800 MIN 46 CFSM 5.07 IN 68.77 AC-FT 152500
WTR YR 1979 TOTAL 85533 MEAN 234 MAX 1410 MIN 33 CFSM 5.63 IN 76.48 AC-FT 169700

12143400 SOUTH FORK SNOQUALMIE RIVER ABOVE ALICE CREEK, NEAR GARCIA, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967-69, May to September 1979.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May to September 1979.

INSTRUMENTATION.--Temperature recorder for period of daily record.

REMARKS.--Unpublished sediment records water years 1967-69 are available in files of district office. Interruptions in the record due to malfunctions of the instrument. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum recorded, 19.0°C July 19-20; minimum recorded, 4.5°C May 28, 30.

TEMPERATURE (DEG °C) OF WATER, MAY TO SEPTEMBER 1979

TEMPERATURE (DEG °C) OF WATER MAY 1979

DAY	MAX	MIN	MEAN	DAY	MAX	MIN	MEAN	DAY	MAX	MIN	MEAN
22	9.5	5.0	7.0	25	10.0	5.0	7.5	28	7.0	4.5	5.5
23	7.0	5.5	6.5	26	7.0	5.5	6.5	29	8.5	5.0	6.0
24	9.0	5.5	7.0	27	6.5	5.0	5.5	30	10.5	4.5	7.5
								31	---	5.5	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.0	6.0	8.0	8.5	7.5	8.0	18.0	14.0	15.5			
2	11.5	6.0	8.5	10.5	7.0	8.5	18.5	13.5	15.5			
3	11.0	6.0	8.5	13.5	7.5	10.0	15.0	13.0	14.0			
4	10.0	7.0	8.5	11.0	9.5	10.0	17.5	12.0	14.5			
5	8.5	6.5	7.5	14.5	9.5	11.5	17.5	12.5	14.5			
6	7.5	6.0	6.5	13.5	10.0	11.5	17.5	12.5	14.5			
7	10.5	5.5	7.5	14.0	10.0	11.5	18.0	12.0	14.5			
8	11.0	6.0	8.5	15.5	10.5	12.5	17.5	12.0	14.5			
9	12.0	6.5	9.0	14.0	11.0	12.5	18.5	12.5	15.0			
10	12.5	7.0	9.5	12.5	11.0	11.5	18.5	13.0	15.5			
11	12.0	7.0	9.5	13.0	10.5	11.5	18.0	13.0	15.0			
12	11.5	7.0	9.0	12.0	10.0	11.0	18.0	12.5	15.0			
13	9.5	7.5	8.5	14.5	9.0	11.0	17.5	13.0	15.0			
14	9.5	6.5	8.0	15.5	9.5	12.0	16.0	13.5	14.5			
15	10.5	7.0	8.5	16.5	10.5	13.0	17.5	13.0	15.0			
16	9.5	7.5	8.5	17.5	11.5	14.0	18.0	13.5	15.0			
17	8.5	7.5	8.0	---	---	---	15.0	14.0	14.5			
18	8.0	7.5	8.0	18.5	12.5	15.0	15.0	13.0	14.0			
19	8.0	7.5	7.5	19.0	12.5	15.5	14.0	12.5	13.5			
20	11.0	7.0	8.5	19.0	13.0	16.0	17.0	12.5	14.5			
21	10.5	7.0	8.5	16.5	13.5	15.0	14.5	13.0	14.0			
22	12.0	7.5	9.5	18.0	13.0	15.0	16.5	12.5	14.5			
23	13.0	7.5	10.0	18.0	12.5	15.0	16.5	12.5	14.0			
24	14.0	8.0	10.5	18.0	13.0	15.0	17.0	12.5	14.5			
25	14.5	8.5	11.5	18.0	12.5	15.0	17.0	12.5	14.5			
26	14.0	9.0	11.5	18.5	13.0	15.5	18.0	13.0	15.0			
27	15.0	9.0	11.5	18.5	13.0	15.5	16.0	13.5	14.0			
28	15.5	9.5	12.0	15.5	13.5	14.0	17.0	13.5	15.0			
29	11.5	9.5	10.5	17.0	12.0	14.5	---	---	---			
30	10.0	8.5	9.5	18.0	12.0	15.0	---	---	---			
31	---	---	---	18.5	13.0	15.5	---	---	---			
MONTH	15.5	5.5	9.0	19.0	7.0	13.0	18.5	12.0	14.5			

12143700 BOXLEY CREEK NEAR CEDAR FALLS, WA

LOCATION.--Lat 47°25'58", long 121°45'04", in NE¼SW¼ sec.35, T.23 N., R.8 E., King County, Hydrologic Unit 17110012, on left bank 1.7 mi (2.7 km) northeast of Cedar Falls and 2.5 mi (4.0 km) upstream from mouth.

DRAINAGE AREA.--1.57 mi² (4.07 km²).

PERIOD OF RECORD.--August 1945 to current year. Prior to October 1960 published in WSP 1932.

GAGE.--Water-stage recorder. Altitude of gage is 1,220 ft (372 m), from topographic map.

REMARKS.--Records fair. No regulation or diversion above station. Flow is mostly seepage from Chester Morse Lake.

AVERAGE DISCHARGE.--34 years, 25.1 ft³/s (0.711 m³/s) 18,180 acre-ft/yr (22.4 hm³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 189 ft³/s (5.35 m³/s) Dec. 19, 1977; maximum gage height recorded, 2.88 ft (0.878 m) Dec. 19, 1977; no flow part or all of each day Oct. 28 to Nov. 9, 1966, Nov. 5-8, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 55 ft³/s (1.56 m³/s) May 31, gage height, 2.91 ft (0.887 m); minimum daily, 0.41 ft³/s (0.012 m³/s) Oct. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.51	1.0	2.1	3.6	2.2	3.9	21	26	54	31	13	6.4
2	.46	1.2	2.1	3.9	2.0	3.9	22	27	54	29	13	6.4
3	.42	1.5	2.1	4.2	1.9	4.0	22	28	52	28	13	6.1
4	.41	1.8	2.0	4.4	1.8	4.4	24	29	52	28	13	5.9
5	.41	1.8	2.0	4.4	2.0	4.4	24	31	52	27	13	5.7
6	.43	1.8	1.9	4.6	2.5	4.6	23	32	52	26	12	5.5
7	.43	1.9	1.9	4.6	2.6	4.8	22	34	52	25	12	5.3
8	.43	2.0	1.8	4.8	2.6	5.0	22	37	51	25	11	5.2
9	.43	2.0	1.8	4.8	2.7	5.0	22	38	49	24	11	5.2
10	.44	2.0	1.8	4.8	2.8	5.2	22	39	49	24	11	4.8
11	.44	2.0	1.8	4.8	2.8	5.2	21	41	48	22	11	4.6
12	.44	2.1	1.8	4.8	3.0	5.3	22	44	48	21	11	4.4
13	.44	2.0	1.7	4.6	3.0	5.3	22	45	47	21	10	4.2
14	.46	2.0	1.8	4.4	2.9	5.5	22	48	47	20	9.9	4.2
15	.46	2.1	1.7	4.0	2.7	5.7	22	48	45	20	9.6	4.0
16	.48	2.2	1.8	3.9	2.6	5.9	22	48	45	20	9.6	3.9
17	.48	2.2	1.9	3.8	2.6	6.4	21	48	45	19	9.2	3.6
18	.49	2.1	1.9	3.5	2.4	6.9	22	48	44	19	9.2	3.4
19	.51	2.1	1.9	3.4	2.3	7.4	22	49	42	18	8.9	3.2
20	.55	2.1	2.0	3.5	2.1	8.1	21	49	40	18	8.4	3.1
21	.53	2.1	2.3	3.5	2.1	8.9	21	49	39	17	8.1	3.0
22	.55	2.1	2.7	3.0	2.1	9.9	22	51	38	17	7.9	2.9
23	.59	2.0	2.8	3.1	2.2	11	22	51	38	16	7.8	2.8
24	.59	2.0	2.9	3.1	2.8	12	23	52	37	16	7.6	2.6
25	.61	1.9	2.9	3.0	3.2	13	23	52	35	15	7.6	2.5
26	.64	1.9	3.0	2.8	3.4	14	24	52	34	15	7.6	2.4
27	.68	1.9	3.2	2.7	3.6	15	24	54	33	15	7.4	2.3
28	.76	1.9	3.4	2.6	3.8	17	24	54	32	15	7.1	2.2
29	.83	1.9	3.4	2.5	---	17	25	54	32	15	7.1	2.0
30	.87	2.1	3.5	2.4	---	19	26	54	31	14	6.9	1.9
31	.95	---	3.5	2.3	---	20	---	54	---	14	6.9	---
TOTAL	16.72	57.7	71.4	115.8	72.7	263.7	675	1366	1317	634	300.8	119.7
MEAN	.54	1.92	2.30	3.74	2.60	8.51	22.5	44.1	43.9	20.5	9.70	3.99
MAX	.95	2.2	3.5	4.8	3.8	20	26	54	54	31	13	6.4
MIN	.41	1.0	1.7	2.3	1.8	3.9	21	26	31	14	6.9	1.9
AC-FT	33	114	142	230	144	523	1340	2710	2610	1260	597	237

CAL YR 1978 TOTAL 3389.04 MEAN 9.29 MAX 44 MIN .41 AC-FT 6720
WTR YR 1979 TOTAL 5010.52 MEAN 13.7 MAX 54 MIN .41 AC-FT 9940

12143800 RATTLESNAKE LAKE AT CEDAR FALLS, WA

LOCATION.--Lat 47°25'39", long 121°46'29", in SW¼SW¼ sec.34, T.23 N., R.8 E., King County, Hydrologic Unit 17110012, on southeast shore and 0.6 mi (1.0 km) northeast of Cedar Falls.

DRAINAGE AREA.--1.86 mi^2 (4.82 km^2).

PERIOD OF RECORD.--November to December 1945 (fragmentary), January 1953 to current year. Extremes prior to October 1960 published in WSP 1932 and daily gage heights are available in the district office.

GAGE.--Nonrecording gage. Datum of gage is 7.25 ft (2.210 m) National Geodetic Vertical Datum of 1929 (levels by city of Seattle).

REMARKS.--No diversion. Inflow is mostly seepage from Chester Morse Lake. Most outflow from lake is seepage, however when the lake is at a gage height above 906 ft, surface water discharge flows through Rattlesnake Ditch toward Boxley Creek.

COOPERATION.--Gage readings furnished by city of Seattle.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 911.80 ft (277.917 m) Nov. 25, 26, 1959; minimum observed, 852.80 ft (259.933 m) Jan. 9, 1953, but may have been less during periods Dec. 13, 1965, to Jan. 3, 1966, and Nov. 10 to Dec. 23, 1970, when water was below gage.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 905.82 ft (276.094 m) June 6; minimum observed, 871.32 ft (265.578 m) Oct. 23.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
INSTANTANEOUS OBSERVATIONS AT 0730

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	877.42	872.34	879.18	887.28	889.08	893.96	898.68	903.68	905.72	905.22	901.60	896.20
2	877.06	872.48	879.80	887.36	888.90	894.16	898.92	903.70	905.74	905.28	901.46	896.10
3	876.70	872.78	880.20	887.50	888.80	894.35	899.18	903.72	905.75	905.22	901.28	895.88
4	876.32	873.12	880.82	887.65	889.10	894.48	899.42	903.78	905.76	905.14	901.12	895.64
5	875.92	873.38	881.40	887.70	889.10	894.68	899.78	903.88	905.80	905.08	901.00	895.38
6	875.60	873.52	881.98	887.75	889.37	894.94	900.12	904.02	905.82	905.00	900.86	895.12
7	875.18	873.62	882.48	887.80	889.52	895.24	900.38	904.15	905.80	904.92	900.72	894.89
8	874.80	874.01	882.84	887.90	889.94	895.60	900.64	904.26	905.80	904.86	900.58	894.65
9	874.42	874.46	883.16	888.00	890.30	895.95	900.88	904.38	905.80	904.76	900.42	894.42
10	874.08	874.86	883.36	888.10	889.34	896.25	901.16	904.50	905.78	904.72	900.30	894.10
11	873.74	875.20	883.58	888.10	890.30	896.46	901.40	904.64	905.75	904.64	900.14	893.90
12	873.48	875.58	883.76	888.10	890.90	896.56	901.56	904.74	905.72	904.56	900.00	893.50
13	873.08	875.86	884.08	888.10	891.48	896.66	901.84	904.84	905.70	904.42	899.80	893.20
14	873.00	876.14	884.28	888.04	892.12	896.70	902.12	904.90	905.68	904.30	899.68	892.98
15	872.94	876.30	884.40	888.12	892.60	896.80	902.38	904.96	905.66	904.18	899.50	892.60
16	872.24	876.68	884.58	888.14	892.90	896.86	902.58	905.02	905.66	904.06	899.36	892.30
17	872.00	876.98	884.71	888.12	893.08	896.90	902.78	905.08	905.66	903.90	899.20	891.98
18	871.78	877.22	884.80	888.16	893.24	896.92	902.98	905.10	905.64	903.76	899.04	891.68
19	872.10	877.40	884.94	888.16	893.30	897.04	903.12	905.18	905.66	903.60	898.88	891.32
20	871.92	878.02	884.96	888.20	893.32	897.00	903.24	905.28	905.66	903.46	898.70	891.02
21	871.90	878.22	885.10	888.20	893.27	897.04	903.34	905.32	905.64	903.32	898.56	890.71
22	871.80	878.30	885.26	888.56	893.30	897.08	903.40	905.38	905.60	903.20	898.36	890.32
23	871.32	878.40	885.40	888.72	893.30	897.14	903.46	905.42	905.58	903.00	898.20	890.00
24	871.38	878.42	885.57	888.90	893.28	897.26	903.50	905.50	905.52	902.84	898.00	889.62
25	871.80	878.50	885.76	889.02	893.20	897.34	903.52	905.52	905.48	902.70	897.78	889.28
26	871.78	878.56	885.90	889.06	893.28	897.48	903.58	905.58	905.42	902.52	897.58	888.96
27	871.80	878.60	886.22	889.10	893.48	897.60	903.62	905.60	905.36	902.36	897.34	888.60
28	871.90	879.70	886.46	889.12	893.70	897.82	903.60	905.64	905.30	902.18	897.14	888.34
29	872.00	879.72	886.68	889.10	---	898.00	903.64	905.68	905.26	902.06	896.94	887.93
30	871.70	878.86	886.90	889.10	---	898.22	903.66	905.68	905.22	901.90	896.70	887.58
31	871.82	---	887.10	889.10	---	898.44	---	905.70	---	901.76	896.50	---
MEAN	873.32	876.24	884.05	888.27	891.55	896.48	901.95	904.87	905.63	903.84	899.25	892.27
MAX	877.42	879.72	887.10	889.12	893.70	898.44	903.66	905.70	905.82	905.28	901.60	896.20
MIN	871.32	872.34	879.18	887.28	888.80	893.96	898.68	903.68	905.22	901.76	896.50	887.58

WTR YR 1979 MEAN 893.15 MAX 905.82 MIN 871.32

12144400 SNOQUALMIE RIVER AT SNOQUALMIE, WA

LOCATION.--Lat 47°31'37", long 121°48'40", on east line of NW¼ sec.32, T.24 N., R.8 E., King County, Hydrologic Unit 17110010, at 7th Avenue bridge in Meadowbrook, 1 mi (1.6 km) east of Snoqualmie, 2.3 mi (3.7 km) upstream from gaging station (12144500), and at mile 42.3 (68.1 km).

DRAINAGE AREA.--375 mi² (971 km²).

PERIOD OF RECORD.--Water years 1959-70, 1976 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
23...	1125	676	53	7.1	8.7	15	1.0
NOV							
13...	1150	1560	43	7.2	2.8	15	3.0
DEC							
18...	1230	1600	43	7.1	3.5	15	3.0
JAN , 1979							
09...	1135	672	51	7.1	2.0	5	3.0
FEB							
06...	1225	2240	40	7.2	4.0	25	9.0
MAR							
05...	1155	8950	25	6.9	4.6	55	30
APR							
09...	1130	2710	33	7.4	5.6	15	1.0
MAY							
14...	1130	4060	25	6.7	8.5	28	2.0
JUN							
25...	1125	2010	26	7.4	12.2	15	3.0
JUL							
16...	1125	1500	32	7.5	15.0	15	2.0
AUG							
27...	1110	379	56	7.3	15.8	15	1.0
SEP							
24...	1200	364	60	6.8	13.2	15	2.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
23...	10.9	.14	.02	.000	.01	.03
NOV						
13...	13.3	.25	.01	.000	.00	.00
DEC						
18...	12.6	.39	.01	.000	.00	.00
JAN , 1979						
09...	13.5	.28	.01	.010	.00	.00
FEB						
06...	13.1	.30	.01	.000	.00	.00
MAR						
05...	13.5	.20	.07	.030	.00	.00
APR						
09...	12.7	.17	.01	.010	.02	.06
MAY						
14...	12.3	.13	.05	.010	.00	.00
JUN						
25...	10.6	.06	.01	.010	.03	.09
JUL						
16...	10.0	.08	.03	.000	.01	.03
AUG						
27...	8.7	.09	.02	.010	.00	.00
SEP						
24...	9.4	.13	.03	.000	.00	.00

12144500 SNOQUALMIE RIVER NEAR SNOQUALMIE, WA

LOCATION.--Lat 47°32'43", long 121°50'28", in SW¼SW¼ sec.19, T.24 N., R.8 E., King County, Hydrologic Unit 17110010, on left bank 0.3 mi (0.5 km) downstream from Snoqualmie Falls, 0.4 mi (0.6 km) upstream from Tokul Creek, 1.5 mi (2.4 km) northwest of Snoqualmie, and at mile 40.0 (64.4 km).

DRAINAGE AREA.--375 mi^2 (971 km^2).

PERIOD OF RECORD.--May 1898 to July 1899; August to September 1899 (monthly discharge only); January to July 1900, September 1902 to July 1904; August to September 1904 (monthly discharge only); October 1904 to September 1905 and November to December 1906 (gage heights only); August 1907 to May 1926 (monthly discharge only); June 1926 to September 1927; October 1927 to September 1932 (monthly discharge only); August 1958 to current year. Published as "near Snoqualmie Falls" 1904-06.

GAGE.--Water-stage recorder. Altitude of gage is 120 ft (36.6 m), from river-profile map. Prior to Nov. 3, 1902, and Nov. 1, to Dec. 31, 1906, nonrecording gages above and below Snoqualmie Falls at different datum. Nov. 3, 1902, to Sept. 30, 1905, nonrecording gage at site 4 mi (6.4 km) upstream and 300 ft (91 m) downstream from South Fork, at different datum.

REMARKS.--Records good. Medium and low flows affected by powerplant 0.1 mi (0.2 km) above station.

AVERAGE DISCHARGE.--49 years (water years, 1899, 1903-04, 1908-32, 1959-79), 2,601 ft^3/s (73.66 m^3/s), 1,884,000 acre-ft/yr (2,320 hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,000 ft^3/s (1,730 m^3/s) Nov. 23, 1959, gage height, 19.78 ft (6.029 m); minimum, 9.7 ft^3/s (0.27 m^3/s) Aug. 14, 27, 1958, gage height, -0.53 ft (-0.162 m); minimum daily, 88 ft^3/s (2.49 m^3/s) Aug. 8, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,200 ft^3/s (402 m^3/s) Mar. 7, gage height, 11.71 ft (3.569 m); minimum, 150 ft^3/s (4.25 m^3/s) Sept. 19, gage height, 2.00 ft (0.610 m); minimum daily, 325 ft^3/s (9.20 m^3/s) Sept. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1340	798	4860	1030	750	2070	1580	4640	3150	3300	657	495
2	1210	784	3270	980	720	1840	1590	4280	4020	3350	655	825
3	1100	3290	3310	940	700	1690	1540	4050	4430	2320	615	1340
4	1040	8620	7610	910	920	2730	2760	5000	4310	2040	607	1060
5	970	3710	4380	880	1840	8630	3670	5490	4450	1890	575	845
6	910	2400	3210	860	3610	12600	3130	5650	3100	1890	551	736
7	861	2080	2520	840	7150	12000	2920	4610	3130	1790	535	619
8	829	8870	2070	825	3720	6830	2600	3730	3360	1710	503	599
9	802	4140	2110	810	6120	4520	2700	3280	2910	1760	499	709
10	829	2820	2120	823	6200	3600	2620	2930	2540	2500	487	825
11	802	2160	3350	1070	4890	3190	2460	2750	2080	2070	483	664
12	764	1790	2980	1020	6080	3190	2340	2870	1840	2060	475	583
13	728	1550	2300	1060	6540	2970	3360	3060	1830	1720	459	507
14	704	1380	2400	945	4980	2820	3120	3940	1810	1500	467	463
15	680	1280	2390	1000	3380	3090	2580	4250	1730	1430	463	402
16	664	2090	1980	861	2730	3210	2280	4640	2080	1440	379	409
17	653	5700	1740	860	2360	2700	2230	4180	2090	1440	349	413
18	639	3500	1520	813	2390	2410	2120	4080	1890	1400	535	376
19	614	2600	1470	774	2240	2210	2000	3750	1750	1290	479	337
20	708	2040	1400	1280	1970	2160	1850	3610	1820	1200	495	385
21	920	1760	1570	4480	1770	2190	1780	4180	1990	1160	448	379
22	756	1510	2450	2450	1620	2160	1930	4580	2210	1060	420	346
23	692	1400	2700	1660	1530	2190	2170	5290	2210	960	427	352
24	1190	1330	6440	1520	1720	2320	2410	4520	2150	906	559	334
25	1010	1200	3870	1340	2650	2360	2620	4310	2160	865	343	325
26	852	1190	2720	1240	3450	2120	2970	4870	1990	835	352	340
27	768	1150	2330	1110	3250	1920	4060	4360	2510	805	402	337
28	744	2620	1730	1040	2510	1790	4700	3420	3400	770	392	343
29	890	2280	1470	950	---	1690	4790	2710	2350	741	376	427
30	965	5370	1230	860	---	1650	4690	2320	2250	682	379	379
31	852	---	1100	790	---	1720	---	2390	---	660	430	---
TOTAL	26486	81412	84600	36021	87790	106570	81570	123740	77540	47544	14796	16154
MEAN	854	2714	2729	1162	3135	3438	2719	3992	2585	1534	477	538
MAX	1340	8870	7610	4480	7150	12600	4790	5650	4450	3350	657	1340
MIN	614	784	1100	774	700	1650	1540	2320	1730	660	343	325
CFSM	2.28	7.24	7.28	3.10	8.36	9.17	7.25	10.6	6.89	4.09	1.27	1.44
IN.	2.63	8.08	8.39	3.57	8.71	10.57	8.09	12.27	7.69	4.72	1.47	1.60
AC-FT	52530	161500	167800	71450	174100	211400	161800	245400	153800	94300	29350	32040

CAL YR 1978 TOTAL 767864 MEAN 2104 MAX 8870 MIN 583 CFSM 5.61 IN 76.17 AC-FT 1523000
WTR YR 1979 TOTAL 784223 MEAN 2149 MAX 12600 MIN 325 CFSM 5.73 IN 77.79 AC-FT 1556000

12145500 RAGING RIVER NEAR FALL CITY, WA

LOCATION.--Lat 47°32'24", long 121°54'28", on west line sec.27, T.24 N., R.7 E., King County, Hydrologic Unit 17110010, on right bank at highway bridge 2.0 mi (3.2 km) southwest of Fall City and 2.6 mi (4.2 km) upstream from mouth.

DRAINAGE AREA.--30.6 mi² (79.3 km²).

PERIOD OF RECORD.--July 1945 to September 1950, water years 1951, and 1953-63 (annual maximum), December 1963 to June 1973, October 1973 to April 1974, October 1974 to current year.

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 250 ft (76 m), from topographic map. Prior to Oct. 1, 1950, water-stage recorder on left bank at present site and datum. August 1951 and January 1953 to February 1963, crest-stage gage only on left bank at present site and datum.

REMARKS.--Records good except those for periods of no gage-height record, Oct. 12-Dec. 4, Dec. 29-Jan. 9, and Jan. 31-Feb. 3, which are poor. Some some small diversions for irrigation and domestic use above station. No regulation.

AVERAGE DISCHARGE.--18 years (water years 1946-50, 1965-72, 1975-79), 142 ft³/s (4.021 m³/s) 63.02 in/yr (1.601 mm/yr), 102,900 acre-ft/yr (127 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,420 ft³/s (96.9 m³/s) Feb. 9, 1951, gage height, 6.75 ft (2.060 m), from high-water mark in well, from rating curve extended above 1,700 ft³/s (48.1 m³/s) on basis of contracted- opening measurement of peak flow; minimum daily discharge, 4.4 ft³/s (0.12 m³/s) Aug. 21, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft³/s (36.8 m³/s) and maximum recorded (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 6	2100	*1,320	37.4	*4.14	1.262

Minimum discharge, 9.3 ft³/s (0.26 m³/s) Aug. 12, 13, 14, 29, 30, Sept. 26, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	33	350	75	61	227	53	49	24	67	11	12
2	50	35	210	69	58	180	64	49	23	51	11	28
3	45	350	280	64	56	166	65	46	21	31	11	33
4	41	700	500	60	76	288	164	59	21	25	11	24
5	38	300	354	57	256	432	173	88	31	23	11	17
6	34	150	259	54	585	377	119	94	31	20	11	15
7	33	300	202	52	606	344	97	85	25	19	10	14
8	31	750	166	50	369	269	91	78	23	20	10	17
9	34	360	185	48	622	210	92	73	21	19	10	24
10	32	210	205	97	585	173	134	65	20	31	9.6	26
11	29	150	316	103	545	149	149	58	19	25	9.6	18
12	28	127	250	107	734	128	164	54	19	24	9.6	15
13	26	110	200	107	580	112	282	51	18	22	9.3	13
14	25	95	224	89	385	102	247	47	18	19	10	12
15	24	88	187	80	272	110	202	44	17	18	11	11
16	23	250	159	73	218	102	168	45	18	17	11	11
17	22	550	138	70	190	91	149	42	19	15	12	11
18	22	280	126	65	185	82	132	40	19	15	12	11
19	21	190	110	68	173	76	119	37	25	14	13	10
20	34	145	102	202	151	71	105	35	24	13	12	11
21	39	125	140	575	136	66	92	32	20	13	12	11
22	28	110	344	285	119	62	84	31	18	13	13	10
23	26	100	285	202	126	58	76	32	17	14	13	10
24	68	92	265	166	326	55	71	32	17	12	12	10
25	45	85	205	134	481	53	67	31	15	13	10	10
26	35	82	168	114	530	51	62	31	15	13	10	9.6
27	31	85	142	102	423	50	58	33	15	12	10	10
28	30	230	117	91	302	49	55	38	14	12	10	12
29	42	165	105	80	---	46	53	31	14	12	10	12
30	43	480	92	72	---	46	51	28	25	11	10	12
31	35	---	83	66	---	55	---	25	---	11	12	---
TOTAL	1069	6727	6469	3477	9150	4280	3438	1483	606	624	337.1	439.6
MEAN	34.5	224	209	112	327	138	115	47.8	20.2	20.1	10.9	14.7
MAX	68	750	500	575	734	432	282	94	31	67	13	33
MIN	21	33	83	48	56	46	51	25	14	11	9.3	9.6
CFSM	1.13	7.32	6.83	3.66	10.7	4.51	3.76	1.56	.66	.66	.36	.48
IN.	1.30	8.18	7.86	4.23	11.12	5.20	4.18	1.80	.74	.76	.41	.53
AC-FT	2120	13340	12830	6900	18150	8490	6820	2940	1200	1240	669	872

CAL YR 1978 TOTAL 38894.0 MEAN 107 MAX 750 MIN 13 CFSM 3.50 IN 47.28 AC-FT 77150
WTR YR 1979 TOTAL 38099.7 MEAN 104 MAX 750 MIN 9.3 CFSM 3.40 IN 46.32 AC-FT 75570

NOTE:--No gage-height record Oct. 12-Dec. 4.

12147500 NORTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°42'45", long 121°47'15", in SW¼NE¼ sec.28, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 2.9 mi (4.7 km) upstream from confluence with South Fork, 7.4 mi (11.9 km) northeast of Carnation, and at mile 11.7 (18.8 km).

DRAINAGE AREA.--39.9 mi² (103.3 km²)

PERIOD OF RECORD.--October 1952 to December 1963, November 1967 to current year.

REVISED RECORDS.--WSP 1566: 1957. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft (183 m), from river-profile map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--22 years (water years, 1953-63, 1969-79), 367 ft³/s (10.39 m³/s) 124.91 in/yr (3,173 mm/yr) 265,900 acre-ft/yr (328 hm³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,560 ft³/s (271 m³/s) Dec. 15, 1959, gage height, 13.15 ft (4.008 m), from rating curve extended above 2,800 ft³/s (79.3 m³/s); minimum, 38 ft³/s (1.08 m³/s) Sept. 13, 14, 1958, but may have been less sometime during period of no gage-height record in October 1952; minimum gage height, 3.36 ft (1.024 m) Sept. 25, 26, 27, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s (85.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 24	0500	*2,490	70.5	*8.38	2.554

Minimum discharge, 51 ft³/s (1.44 m³/s) Sept. 25, 26, 27, gage height, 3.36 ft (1.024 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	199	143	532	223	157	321	225	433	339	357	82	63
2	187	188	367	212	157	291	225	419	360	512	82	122
3	177	805	564	205	155	279	243	402	348	249	79	157
4	169	1130	715	192	161	656	676	568	324	210	78	122
5	162	388	419	183	394	1650	560	600	461	186	76	118
6	155	279	339	179	910	1640	454	508	324	177	74	94
7	150	377	308	170	740	1400	388	461	246	166	73	70
8	146	840	273	166	486	696	409	405	230	170	71	84
9	145	374	282	161	1160	520	504	363	246	172	71	115
10	165	262	291	225	715	461	405	330	264	312	68	122
11	167	237	556	276	672	451	377	318	270	232	67	91
12	190	215	367	207	945	438	391	327	243	235	66	78
13	140	195	308	190	925	433	560	351	217	192	65	71
14	135	183	330	179	564	430	412	388	186	166	66	66
15	131	177	306	170	433	516	348	409	170	159	66	63
16	128	636	273	161	374	408	321	444	172	155	65	62
17	126	1030	252	157	348	381	345	370	177	146	66	59
18	123	460	240	153	384	345	321	351	168	140	65	58
19	121	351	225	164	342	330	306	333	252	130	65	56
20	190	285	215	720	306	336	288	351	261	124	64	56
21	171	255	225	875	285	342	285	377	197	119	63	55
22	138	232	370	370	267	329	312	405	172	112	65	54
23	131	217	470	208	255	348	345	388	166	106	65	53
24	266	207	1430	249	282	357	357	354	177	103	60	52
25	166	197	504	225	486	339	363	354	192	100	59	51
26	144	188	374	210	620	297	416	402	190	97	57	51
27	135	217	324	200	489	273	500	354	181	95	56	51
28	135	462	276	186	374	258	496	342	177	92	56	60
29	183	270	260	177	---	252	479	297	170	89	55	62
30	168	1040	248	170	---	249	444	267	192	86	55	58
31	149	---	233	164	---	237	---	291	---	85	58	---
TOTAL	4860	11808	11860	7407	13430	15353	11763	12052	7072	5274	2058	2283
MEAN	157	394	383	239	480	495	392	389	236	170	66.4	76.1
MAX	266	1130	1430	875	1160	1650	676	600	461	512	82	157
MIN	121	143	215	153	155	237	225	267	166	85	55	51
CFSM	3.94	9.88	9.60	5.99	12.0	12.4	9.83	9.75	5.92	4.26	1.66	1.91
IN.	4.53	11.01	11.07	6.91	12.52	14.31	10.97	11.24	6.59	4.92	1.92	2.13
AC-FT	9640	23420	23540	14690	26640	30450	23330	23910	14030	10460	4080	4530

CAL YR 1978 TOTAL 98992 MEAN 271 MAX 1430 MIN 75 CFSM 6.79 IN 92.29 AC-FT 196400
WTR YR 1979 TOTAL 105229 MEAN 288 MAX 1650 MIN 51 CFSM 7.22 IN 98.11 AC-FT 208700

12147600 SOUTH FORK TOLT RIVER NEAR INDEX, WA

LOCATION.--Lat 47°42'25", long 121°35'56", in NE¼SW¼ sec.25, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.6 mi (1.0 km) upstream from Phelps Creek, 8.1 mi (13.0 km) south of Index, and mile 12.9 (20.8 km).

DRAINAGE AREA.--5.34 mi² (13.83 km²).

PERIOD OF RECORD.--December 1959 to December 1963, November 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,850 ft (564 m) from topographic map. Prior to Oct. 3, 1961, at datum 0.85 ft (0.259 m) higher.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--14 years (water years 1961-63, 1969-79), 56.2 ft³/s (1.592 m³/s) 142.92 in/yr (3,630 mm/yr), 40,720 acre-ft/yr (50.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,880 ft³/s (53.2 m³/s) Nov. 19, 1962; maximum gage height, 7.13 ft (2.173 m), present datum, Dec. 14, 1959; minimum daily discharge, 2.3 ft³/s (0.065 m³/s) Aug. 28-30, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 550 ft³/s (15.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 20	1800	*552	15.6	*3.99	1.216

Minimum discharge, 3.1 ft³/s (0.088 m³/s) Sept. 25-27, gage height, 0.48 ft (0.146 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	14	51	12	7.8	18	18	81	71	76	8.3	7.1
2	17	33	27	11	7.4	16	17	82	84	90	7.8	15
3	16	164	70	10	7.0	16	19	76	82	64	7.5	16
4	13	104	111	9.8	9.0	109	67	136	74	37	7.1	12
5	14	90	66	9.1	98	302	69	132	106	32	6.9	11
6	13	28	26	8.7	169	320	56	115	71	31	6.7	9.0
7	12	85	21	8.3	189	232	48	81	47	30	6.5	7.5
8	12	150	18	7.9	93	94	49	63	42	30	6.3	8.3
9	11	53	20	7.6	216	59	57	53	47	33	5.9	13
10	12	38	19	11	102	50	42	48	56	62	5.7	12
11	13	21	78	17	88	68	37	67	59	45	5.7	8.8
12	12	17	33	14	113	51	39	51	52	41	5.5	7.1
13	9.9	14	22	10	108	49	68	62	63	30	5.3	6.1
14	8.6	12	38	9.3	57	48	41	74	32	25	5.3	5.3
15	8.0	12	26	8.5	36	57	38	82	26	24	5.3	4.9
16	7.6	97	20	7.8	28	53	26	94	26	26	5.3	4.5
17	7.3	132	17	7.3	23	36	30	79	28	24	5.3	4.3
18	7.0	91	15	6.9	27	33	27	71	27	22	5.3	3.9
19	6.5	29	14	10	21	31	24	64	47	20	5.1	3.9
20	23	21	13	190	16	34	21	60	51	18	5.1	3.9
21	19	17	15	118	17	37	22	79	36	17	5.1	3.7
22	12	15	37	42	15	38	30	91	30	14	5.7	3.7
23	13	14	66	28	14	40	38	91	28	12	5.3	3.5
24	56	13	200	21	17	44	45	79	33	12	4.9	3.5
25	23	12	53	17	38	40	50	81	40	11	4.5	3.3
26	16	11	29	15	56	32	66	99	40	11	4.1	3.1
27	13	19	32	13	48	26	90	81	37	11	3.9	3.5
28	14	49	19	11	26	23	93	61	37	10	3.9	11
29	25	29	17	10	---	22	96	47	36	9.0	3.9	4.3
30	20	138	15	9.2	---	21	84	43	47	8.2	3.9	5.7
31	15	---	13	8.4	---	19	---	51	---	8.3	8.3	---
TOTAL	466.9	1510	1159	666.6	1507.2	2001	1395	2358	1433	861.5	173.4	211.7
MEAN	15.1	50.3	37.4	21.5	53.8	64.5	46.5	76.1	47.8	27.8	5.59	7.06
MAX	56	164	200	190	216	320	96	136	106	90	8.3	16
MIN	6.5	11	13	6.9	7.0	16	17	43	26	8.2	3.9	3.1
CFSM	2.83	9.42	7.00	4.03	10.1	12.1	8.71	14.3	8.95	5.21	1.05	1.32
IN.	3.25	10.52	8.07	4.64	10.50	13.96	9.72	16.42	9.98	6.00	1.21	1.47
AC-FT	926	3000	2300	1320	2990	3970	2770	4680	2840	1710	344	420

CAL YR 1978	TOTAL 15163.0	MEAN 41.5	MAX 280	MIN 3.5	CFSM 7.77	IN 105.61	AC-FT 30080
WTR YR 1979	TOTAL 13743.3	MEAN 37.7	MAX 320	MIN 3.1	CFSM 7.06	IN 95.72	AC-FT 27260

12148000 SOUTH FORK TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'22", long 121°42'46", in SW¼SW¼ sec.31, T.26 N., R.9 E., King County, Hydrologic Unit 17110010, on left bank 0.1 mi (0.2 km) upstream from private road bridge, 9.8 mi (15.8 km) northeast of Carnation, and at mile 6.8 (10.9 km).

DRAINAGE AREA.--19.7 mi² (51.0 km²).

PERIOD OF RECORD.--October 1952 to December 1963, June 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,300 ft (396 m), from river-profile map.

REMARKS.--Records good. Regulation by South Fork Tolt Reservoir, capacity, 57,830 acre-ft (71.3 hm³) since Sept. 1963. During 1979 water year the Seattle Water Department diverted an average daily discharge of about 83 ft³/s (2.35 m³/s) above the station.

AVERAGE DISCHARGE.--11 years (water years 1953-63), 198 ft³/s s(5.607 m³/s), 143,300 acre-ft/yr (177 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,500 ft³/s (184 m³/s) Dec. 15, 1959, gage height, 7.45 ft (2.271 m), from rating curve extended above 2,700 ft³/s (76.5 m³/s); maximum gage height, 7.62 ft (2.323 m) Nov. 20, 1958, backwater from debris; minimum discharge, 8.4 ft³/s (0.24 m³/s) Sept. 12, 1963, minimum gage height, 0.81 ft (0.247 m) Aug. 23-27, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 616 ft³/s (17.4 m³/s) Mar. 8, gage height, 3.96 ft (1.207 m), caused by regulation; minimum, 33 ft³/s (0.934 m³/s) Aug. 6; gage height, 2.04 ft (0.622 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	390	56	78	86	52	150	54	61	56	44	35	37
2	411	60	72	84	48	195	55	63	59	42	35	40
3	416	75	78	84	48	150	57	71	64	38	35	37
4	321	80	79	84	49	170	81	122	63	37	34	37
5	230	64	100	84	60	115	69	201	76	37	34	36
6	237	61	97	84	82	110	63	250	86	37	35	36
7	154	64	96	84	72	402	61	215	65	36	36	40
8	110	73	96	84	62	575	62	174	60	36	35	45
9	110	65	99	84	76	252	64	149	60	37	35	45
10	82	63	90	84	66	90	64	124	39	38	35	44
11	51	62	120	83	72	89	64	107	39	38	35	45
12	57	62	136	85	82	89	67	97	39	37	35	46
13	57	61	165	85	92	89	60	94	36	37	35	46
14	57	61	185	81	96	89	64	106	36	36	35	46
15	57	61	183	81	72	91	62	117	36	36	35	46
16	56	71	183	81	72	129	61	134	36	36	35	47
17	56	77	132	80	73	153	63	133	36	36	35	48
18	56	72	96	70	75	122	63	110	36	35	35	48
19	56	67	94	59	78	66	62	105	36	35	35	48
20	62	65	94	79	105	52	61	102	36	35	35	48
21	57	63	96	82	124	52	60	111	36	35	35	48
22	56	62	106	64	124	54	60	116	36	35	35	48
23	59	62	106	58	124	53	60	115	36	35	35	48
24	61	62	114	57	120	52	60	100	36	35	34	48
25	57	61	105	56	130	52	60	89	36	35	34	48
26	57	61	97	55	130	52	60	94	36	35	34	48
27	56	65	92	55	130	52	61	110	37	35	35	48
28	57	66	90	55	144	52	61	120	36	35	35	48
29	58	63	89	54	---	52	61	111	36	35	36	41
30	56	92	89	54	---	54	61	91	36	35	36	39
31	56	---	87	54	---	55	---	84	---	35	36	---
TOTAL	3666	1977	3361	2270	2458	3734	1869	3668	1353	1128	1084	1329
MEAN	118	65.9	108	73.2	87.8	120	62.3	118	45.1	36.4	35.0	44.3
MAX	416	92	185	86	144	575	81	250	86	44	36	48
MIN	51	56	72	54	48	52	54	61	36	35	34	36
AC-FT	7270	3920	6670	4500	4880	7410	3710	7280	2680	2240	2150	2640

CAL YR 1978 TOTAL 24900 MEAN 68.2 MAX 416 MIN 28 AC-FT 49390
WTR YR 1979 TOTAL 27895 MEAN 76.4 MAX 575 MIN 34 AC-FT 55330

12148500 TOLT RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°41'43", long 121°49'22", in SE¼NE¼ sec.31, T.26 N., R.8 E., King County, Hydrologic Unit 17110010, on right bank 500 ft (152 m) downstream from the forks, 0.4 mi (0.6 km) upstream from Stossel Creek, 5.5 mi (8.8 km) northeast of Carnation, and at mile 8.7 (14.0 km).

DRAINAGE AREA.--81.4 mi² (210.8 km²).

PERIOD OF RECORD.--August 1928 to January 1932, September 1937 to current year. Prior to October 1951, published as "near Tolt." Chemical analyses July 1960 to September 1970.

REVISED RECORDS.--WSP 1286: 1929(M), 1930, 1938(M), 1939, 1943(M), 1945(M), 1945(M), 1951(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 348 ft (106.1 m) National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Oct. 31, 1928, nonrecording gage and Oct. 31, 1928, to Jan. 3, 1932, water-stage recorder, at site 350 ft (107 m) upstream at datum 7.1 ft (2.16 m) higher (river-profile survey). Sept. 1 to Oct. 6, 1937, nonrecording gage at present site at datum 1.64 ft (0.500 m) higher.

REMARKS.--Records good. Some regulation by South Fork Reservoir, capacity, 57,830 acre-ft (71.3 hm³). During the current water year city of Seattle Water Department diverted an average daily discharge of about 82 ft³/s (2.32 m³/s) above station for municipal use.

AVERAGE DISCHARGE.--45 years (water years, 1929-31, 1938-79), 599 ft³/s (16.96 m³/s), 434,000 acre-ft/yr (535 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,400 ft³/s (493 m³/s) Dec. 15, 1959, gage height, 13.04 ft (3.975 m), from rating curve extended above 7,600 ft³/s (215 m³/s) on basis of slope-area measurement at gage height, 12.92 ft (3.938 m); minimum, 53 ft³/s (1.50 m³/s) Sept. 22, 23, 1951, gage height, 3.84 ft (1.170 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,880 ft³/s (81.6 m³/s) Dec. 24, gage height, 8.15 ft (2.484 m), no peak above base of 3,400 ft³/s (96.3 m³/s); minimum, 92 ft³/s (2.61 m³/s) Aug. 29, 30, gage height, 4.21 ft (1.283 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	605	211	929	380	254	641	332	530	396	392	117	102
2	603	241	677	360	247	590	322	521	420	605	117	166
3	600	916	825	339	251	565	339	507	416	295	115	218
4	565	1460	1070	322	254	939	912	746	396	249	114	180
5	444	603	756	305	529	2060	836	873	535	221	112	164
6	436	439	667	297	1100	2070	646	932	428	216	110	146
7	366	460	601	292	1110	2130	550	758	325	202	110	132
8	275	1080	569	288	729	1530	555	674	283	205	108	140
9	276	530	551	284	1490	1020	701	590	283	205	107	171
10	209	418	562	351	1050	696	595	516	295	346	105	185
11	235	360	802	413	974	668	560	476	302	270	105	149
12	226	327	705	350	1450	663	580	467	280	283	103	136
13	222	352	655	339	1420	630	806	495	255	241	102	128
14	203	285	722	319	953	615	625	530	224	200	103	123
15	197	275	608	303	707	712	521	555	208	192	103	121
16	193	789	650	292	585	701	467	630	210	190	102	119
17	190	1320	571	283	545	625	494	550	216	180	103	117
18	187	684	491	269	580	555	453	498	206	173	103	115
19	183	567	425	265	521	471	453	453	276	164	103	114
20	279	460	382	841	498	449	449	467	299	157	103	114
21	253	462	386	1200	516	440	420	507	235	151	100	114
22	208	365	563	584	494	436	440	540	210	144	102	112
23	208	346	665	462	467	440	462	535	200	138	102	110
24	359	365	1830	408	507	449	467	467	208	136	98	110
25	245	316	811	362	788	432	458	449	224	138	97	114
26	216	304	622	334	960	384	516	512	224	142	95	105
27	204	323	555	321	836	356	620	503	213	128	94	105
28	204	574	509	300	696	343	620	507	210	126	98	121
29	258	410	460	285	---	339	595	412	205	123	94	114
30	243	1230	425	272	---	360	565	364	221	121	94	110
31	219	---	400	262	---	368	---	360	---	121	97	---
TOTAL	9327	16250	20626	11682	20511	22677	16339	16914	8405	6454	3216	3955
MEAN	301	542	665	377	733	732	545	546	280	208	104	132
MAX	605	1460	1830	1200	1490	2130	912	932	535	605	117	218
MIN	183	211	382	262	247	339	322	360	200	121	94	102
AC-FT	18500	32230	40910	23170	40680	44980	32410	33550	16670	12800	6380	7840

CAL YR 1978 TOTAL 153173 MEAN 420 MAX 2000 MIN 119 AC-FT 303800
WTR YR 1979 TOTAL 156354 MEAN 428 MAX 2130 MIN 94 AC-FT 310100

12149000 SNOQUALMIE RIVER NEAR CARNATION, WA

LOCATION.--Lat 47°39'58", long 121°55'27", in NW¼SW¼ sec.9, T.25 N., R.7 E., King County, Hydrologic Unit 17110010, on left bank 40 ft (12 m) downstream from highway bridge, 1.3 mi (2.1 km) northwest of Carnation, 1.9 mi (3.1 km) downstream from Tolt River, and at mile 23.0 (37.0 km).

DRAINAGE AREA.--603 mi² (1,562 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1928 to current year. Prior to October 1951, published as "near Tolt."

REVISED RECORDS.--WSP 1316: 1932-33(M). WSP 1446: 1934(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Dec. 20, 1933, nonrecording gage on old bridge, 100 ft (30 m) upstream and Dec. 20, 1933, to Sept. 30, 1939, water-stage recorder at present site, at datum 42.96 ft (13.094 m) higher.

REMARKS.--Water-discharge records good. During 1979 city of Seattle Water Department diverted an average daily discharge of 82 ft³/s (2.32 m³/s) above station for municipal use. Several small diversions for irrigation and domestic use above station. Low flow diverted for operation of powerplant at Snoqualmie Falls but returned to river above station. Some pondage at Snoqualmie Falls and some diurnal fluctuation caused by powerplant.

AVERAGE DISCHARGE.--51 years, 3,797 ft³/s (108.0 m³/s), 85.51 in/yr (2,172 mm/yr), 2,751,000 acre-ft/yr (3,390 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,500 ft³/s (1,690 m³/s) Feb. 27, 1932, elevation, 59.88 ft (18.251 m), from graph based on gage readings; maximum elevation observed, 59.93 ft (18.267 m) Nov. 13, 1932; minimum discharge, 239 ft³/s (6.77 m³/s) Aug. 21, 1945, but may have been less sometime during period of faulty intake action Sept. 13 or 14, 1949; minimum daily discharge, 396 ft³/s (11.2 m³/s) Sept. 24, 1938.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	1600	*16,500	467	*51.81	15.792

Minimum discharge, 432 ft³/s (12.2 m³/s) Sept. 19, elevation, 43.75 ft (13.335 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2350	1210	8430	1700	1330	3800	2200	5820	3670	3580	903	680
2	2180	1180	5780	1600	1290	3280	2150	5420	4690	4730	914	969
3	2040	3700	4770	1500	1280	3090	2140	5080	5280	3010	881	1610
4	1890	11000	9900	1420	1420	3990	3720	6160	5200	2450	859	1460
5	1680	6320	7020	1360	2550	10700	5580	7020	5200	2280	826	1170
6	1590	3960	5200	1310	4260	14500	4730	7420	5300	2210	793	1060
7	1470	3000	4190	1260	10300	15600	4330	6320	3760	2130	771	925
8	1340	9690	3430	1220	6020	10900	3790	5100	3040	2040	750	870
9	1280	6360	3330	1190	7860	7080	4060	4510	3060	2010	730	950
10	1330	4240	3360	1590	9570	5400	4080	4050	3350	2790	710	1170
11	1260	3220	4750	1850	7620	4750	3870	3690	3920	2630	710	1020
12	1200	2680	4800	1760	9310	4640	3700	3740	3870	2420	690	859
13	1150	2310	3790	1810	10200	4420	5180	3900	3280	2200	690	793
14	1090	2060	3740	1670	7680	4140	5120	4840	2720	1890	680	720
15	1040	1890	3900	1530	5660	4390	4190	5240	2290	1770	700	660
16	1000	2610	3250	1530	4510	4690	3560	5400	2140	1760	690	641
17	992	7710	2870	1460	3920	4050	3420	5360	2180	1740	502	631
18	958	5520	2550	1400	3850	3520	3220	5020	2080	1720	680	641
19	947	4210	2320	1380	3600	3120	2980	4710	2200	1610	826	493
20	1050	3270	2170	1920	3190	3040	2800	4440	2580	1540	641	556
21	1430	2760	2240	6890	3010	2960	2610	5040	2350	1460	680	593
22	1180	2420	3540	4170	2710	2920	2690	5540	2130	1390	680	584
23	1060	2070	4440	2930	2530	2900	2950	6460	2060	1280	650	565
24	1680	2060	8610	2630	2800	3060	3220	5620	2170	1210	702	565
25	1610	1900	6260	2190	4400	3690	3430	5260	2350	1170	574	538
26	1330	1810	4390	2000	6660	2770	3850	5840	2580	1150	565	547
27	1210	1830	3630	1820	5840	2550	4960	5560	2470	1090	565	547
28	1140	3510	2930	1690	4730	2380	5920	4510	2440	1050	631	565
29	1280	3300	2480	1560	---	2250	6000	3610	2450	1030	574	612
30	1460	6900	2070	1480	---	2200	5960	2980	2210	969	584	612
31	1300	---	1850	1400	---	2320	---	2920	---	914	612	---
TOTAL	42517	114660	131990	59240	137980	148580	116410	156980	93020	59223	21843	23614
MEAN	1372	3822	4258	1911	4928	4793	3880	5064	3101	1910	705	787
MAX	2350	11000	9900	6890	10300	15600	6000	7420	5300	4730	914	1610
MIN	947	1180	1850	1190	1280	2200	2140	2920	2060	914	502	493
CFSM	2.28	6.34	7.06	3.17	8.17	7.95	6.43	8.40	5.14	3.17	1.17	1.31
IN.	2.62	7.07	8.14	3.65	8.51	9.17	7.18	9.68	5.74	3.65	1.35	1.46
AC-FT	84330	227400	261800	117500	273700	294700	230900	311400	184500	117500	43330	46840

CAL YR 1978 TOTAL 1071203 MEAN 2935 MAX 11000 MIN 642 CFSM 4.87 IN 66.08 AC-FT 2125000
WTR YR 1979 TOTAL 1106057 MEAN 3030 MAX 15600 MIN 493 CFSM 5.03 IN 68.23 AC-FT 2194000

12149000 SNOQUALMIE RIVER NEAR CARNATION, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--At highway bridge 40 ft (12 m) upstream from gaging station.

PERIOD OF RECORD.--Water years 1965-71, 1973-74, 1977 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1966 to June 1969.
WATER TEMPERATURES: October 1966 to June 1969.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
23...	1200	1030	61	7.2	9.4	25	2.0
NOV							
13...	1230	2240	60	7.2	3.1	15	2.0
DEC							
18...	1305	2800	59	7.0	4.0	25	3.0
JAN , 1979							
09...	1210	1390	61	7.2	1.6	15	5.0
FEB							
06...	1300	3090	44	7.3	3.6	40	10
MAR							
05...	1225	11600	26	6.8	5.2	65	50
APR							
09...	1210	4080	40	7.3	6.4	25	1.0
MAY							
14...	1210	5120	30	6.9	11.2	20	2.0
JUN							
25...	1200	2480	35	7.2	14.9	15	2.0
JUL							
16...	1155	1730	41	7.3	17.3	15	2.0
AUG							
27...	1135	547	67	7.3	17.5	20	1.0
SEP							
24...	1230	574	57	7.2	14.6	25	1.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
23...	11.7	.16	.02	.010	.01	.03
NOV						
13...	13.2	.36	.01	.010	.00	.00
DEC						
18...	12.5	.39	.01	.000	.01	.03
JAN , 1979						
09...	13.0	.37	.01	.020	.00	.00
FEB						
06...	13.3	.40	.06	.010	.00	.00
MAR						
05...	13.5	.24	.03	.040	.00	.00
APR						
09...	12.3	.23	.01	.010	.02	.06
MAY						
14...	11.5	.14	.03	.010	.00	.00
JUN						
25...	9.7	.08	.01	.010	.01	.03
JUL						
16...	9.4	.09	.04	.000	.01	.03
AUG						
27...	9.4	.11	.02	.010	.00	.00
SEP						
24...	10.2	.14	.03	.000	.01	.03

12150800 SNOHOMISH RIVER NEAR MONROE, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 47°49'52", long 122°02'50", in NE¼NW¼ sec.16, T.27 N., R.6 E., Snohomish County, Hydrologic Unit 17110011, on left bank 150 ft (46 m) upstream from State Highway 522 bridge, 0.1 mi (0.2 km) downstream from confluence of Snoqualmie and Skykomish Rivers, 3.6 mi (5.8 km) southwest of Monroe, and 6 mi (9.7 km) south of Snohomish.

DRAINAGE AREA.--1,537 mi² (3,981 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1963 to current year. Water years 1932, 1934, 1951, 1960, 1962-63 (annual maximum stage only) published in WSP 1932. Approximate annual maximum stages for water years 1921, 1949-50, 1952-59, and 1961 are on file in district office.

GAGE.--Water-stage recorder. Datum of gage is 13.25 ft (4.039 m) National Geodetic Vertical Datum of 1929. Prior to February 1963 crest-stage gage only at site about 800 ft (244 m) downstream and Feb. 8, 1963, to May 27, 1964, water-stage recorder at site 100 ft (30 m) upstream both National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Some regulation by powerplant above station at Snoqualmie Falls, 40 mi (64 km) upstream and by Spada Lake, 30 mi (48 km) upstream. Minor diversions for irrigation returned to river above gage. During 1979 water year city of Seattle Water Department diverted an average daily discharge of about 82 ft³/s (2.32 m³/s) above station for municipal use and the city of Everett diverted an average daily discharge of 127 ft³/s (3.60 m³/s) above the station for municipal use.

AVERAGE DISCHARGE.--16 years, 9,951 ft³/s (281.8 m³/s), 87.92 in/yr (2,233 mm/yr), 7,209,000 acre-ft/yr (8,890 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum stage, 35.8 ft (10.91 m) Feb. 10, 1951, datum then in use (discharge not determined); maximum discharge during period February 1963 to September 1978, 115,000 ft³/s (3,260 m³/s) Dec. 4, 1975, gage height, 22.92 ft (6.986 m); minimum, 1,140 ft³/s (32.3 m³/s) Sept. 29, 1967, Sept. 17, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1921 reached a discharge of approximately 180,000 ft³/s (5,100 m³/s). Floods in November or December 1897 and November 1906 are believed to be higher.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 33,000 ft³/s (935 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	1100	33,300	943	10.10	3.078	Mar. 7	1300	*44,400	1,260	*12.47	3.801

Minimum, 1,390 ft³/s (39.4 m³/s) Sept. 26, gage height, 0.98 ft (0.299 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5440	2030	17200	4600	3190	8570	5530	15400	[illegible]	9410	2300	1620
2	5090	2760	12900	4400	3000	7320	5330	14300	12900	12200	2360	2080
3	4690	5770	10100	4200	2900	6470	5200	13400	14000	9100	2290	3560
4	4360	26500	16400	4000	3130	7500	7610	15400	14000	7150	2220	3500
5	4010	18600	15300	3850	4430	25700	11600	18400	15300	6580	2130	2940
6	3720	11000	11300	3700	7020	30300	10700	18900	16200	6370	2040	2580
7	3520	8620	8950	3600	17900	41900	9620	16300	11000	6160	1990	2270
8	3270	25500	7610	3550	13100	31600	8740	13200	9410	5970	1900	2150
9	3140	18200	6950	3500	14000	20700	10500	11600	9130	5870	1870	2580
10	3230	11800	6960	3760	20400	15300	12200	10500	9070	7690	1850	2840
11	3250	8840	8330	3900	17100	12700	9260	9510	11300	7990	1810	2540
12	3090	7310	9720	3850	20100	11300	8630	9450	11600	7100	1770	2150
13	2900	6260	7780	4050	23800	10700	11300	9730	10300	6800	1740	1940
14	2770	5480	7570	3770	19500	9910	12200	11600	8650	5750	1770	1920
15	2670	5000	9170	3590	13900	10300	9910	13000	7240	5250	1820	1760
16	2560	5010	7670	3420	10800	11500	8350	14500	6670	5120	1770	1700
17	2480	15000	6680	3240	9150	10200	7950	14200	6730	5020	1710	1670
18	2420	13600	6080	3140	8000	8830	7670	13300	6370	4920	1790	1640
19	2350	10600	5530	3070	8430	7910	7260	12800	6370	4700	1940	1530
20	2470	8350	5140	3690	7480	7420	6760	11900	7240	4400	1760	1480
21	3290	6980	5080	11200	6690	7360	6290	13100	7120	4150	1810	1520
22	2800	6110	6530	8970	6100	7300	6270	14500	6520	3800	1840	1520
23	2500	5330	9040	6650	5610	7310	6820	17200	6190	3560	1870	1460
24	3460	5030	10100	5740	5810	7630	7500	16000	6340	3300	1700	1450
25	3040	4710	16200	5060	9340	7880	8200	14900	6910	3220	1710	1420
26	3170	4450	10700	4640	12300	7440	9280	16000	7600	3080	1520	1390
27	2850	4290	8500	4330	12500	6730	11700	16500	7600	2900	1520	1440
28	2670	6510	7150	4100	10500	6170	14600	13200	7390	2800	1560	1800
29	2860	7050	5070	3630	---	5930	15000	10600	7420	2760	1520	1650
30	3300	10200	5100	3590	---	5800	15700	8760	6700	2600	1490	1610
31	3050	---	4000	3340	---	5800	---	8450	---	2400	1550	---
TOTAL	101400	278440	284410	136430	297040	380743	276260	416620	276760	[illegible]	57000	59530
MEAN	3271	9283	9175	4401	10610	12280	9209	13440	9225	5441	1839	1984
MAX	5440	26500	[illegible]	11200	23800	41900	15700	18900	16200	12200	2360	3560
MIN	2350	2760	4000	3070	2900	5800	5200	8450	6190	2400	1490	1390
CFSM	2.13	6.04	5.97	2.86	6.90	7.99	5.99	8.74	6.00	3.54	1.20	1.29
IN.	2.45	6.74	6.88	3.30	7.19	9.22	6.69	10.08	6.70	4.08	1.38	1.44
AC-FT	201100	552400	564100	270600	589200	755200	548000	826400	549000	334500	113100	118100

CAL YR 1978 TOTAL 2699910 MEAN 7397 MAX 26500 MIN 1970 CFSM 4.81 IN 65.35 AC-FT 5355000
WTR YR 1979 TOTAL 2733340 MEAN 7489 MAX 41900 MIN 1390 CFSM 4.87 IN 66.15 AC-FT 5422000

12150800 SNOHOMISH RIVER NEAR MONROE, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--At cableway 200 ft (61 m) upstream from gaging station.

PERIOD OF RECORD.--December 1974 to January 1976, July to September 1979.

REMARKS.--Unpublished records of temperature and suspended-sediment concentration are available in files of district office.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
JUL , 1979											
02...	1200	13200	22	7.5	10.4	4.0	10.8	K540	2100	7	0
AUG											
15...	1400	1810	52	7.7	21.7	32	8.8	44	10	21	5
SEP											
05...	1150	2960	41	7.4	13.0	1.6	9.6	110	1600	16	1

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)
JUL , 1979											
02...	2.1	.5	1.7	32	.3	.4	7	4.1	1.0	.0	4.8
AUG											
15...	6.1	1.4	2.9	22	.3	.6	16	3.7	3.5	.1	7.5
SEP											
05...	4.7	1.0	2.1	22	.2	.5	15	2.7	3.3	.1	6.1

DATE	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)
JUL , 1979										
02...	24	19	.03	855	.14	.01	.12	.13	.00	.20
AUG										
15...	51	35	.07	249	.11	.01	.15	.16	.04	.12
SEP										
05...	50	30	.07	400	.22	.04	.65	.69	.46	.23

DATE	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
JUL , 1979										
02...	.27	1.2	.030	.010	--	3.2	.1	11	392	53
AUG										
15...	.27	1.2	.010	.000	--	--	--	3	15	80
SEP										
05...	.91	4.0	.010	.020	2.7	--	--	6	32	87

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, SUSPENDED RECOVERABLE (UG/L AS BA)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM SUSPENDED RECOVERABLE (UG/L AS CD)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)
JUL , 1979										
02...	1200	1	1	0	0	<2	0	0	<1	10

DATE	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)
JUL , 1979										
02...	10	0	1	0	<3	9	8	1	820	760

12150800 SNOHOMISH RIVER NEAR MONROE, WA--Continued

WATER QUALITY DATA

DATE	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, SUS- PENDED RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, SUS- PENDED RECOV. (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY SUS- PENDED RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)
JUL , 1979										
02...	60	9	9	0	20	0	30	.0	.0	.0

DATE	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, SUS- PENDED TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, SUS- PENDED RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, SUS- PENDED RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
JUL , 1979									
02...	0	0	0	0	0	0	20	0	20

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	JUL 2,79	AUG 15,79	SEP 5,79
TIME	1200	1400	1150
TOTAL CELLS/ML	52	130	420
DIVERSITY: DIVISION	0.0	0.7	1.4
.CLASS	0.0	0.7	1.4
..ORDER	0.0	0.7	1.5
...FAMILY	0.8	0.9	2.2
....GENUS	0.8	0.9	2.4

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...OOCYSTACEAE						
....ANKISTRODESMUS	--	-	--	-	50	12
....CHLORELLA	--	-	--	-	15	4
....TETRAEDRON	--	-	--	-	5	1
...SCENEDESMACEAE						
....SCENEDESMUS	--	-	100#	80	20	5
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	--	-	--	-	10	2
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	39#	75	13	10	10	2
....RHOICOSPHENIA	--	-	--	-	5	1
...CYMBELLACEAE						
....CYMBELLA	--	-	--	-	10	2
...FRAGILARIACEAE						
....SYNEDRA	--	-	--	-	25	6
...NAVICULACEAE						
....NAVICULA	--	-	--	-	20	5
...NITZSCHIACEAE						
....NITZSCHIA	13#	25	13	10	10	2
...TABELLARIACEAE						
....TABELLARIA	--	-	--	-	5	1
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..HORMOGONALES						
...OSCILLATORIACEAE						
....SCHIZOTHRIX	--	-	--	-	230#	55

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

12155400 PILCHUCK RIVER AT SNOHOMISH, WA

LOCATION.--Lat 47°54'47", long 122°04'56", in NW¼SE¼ sec.18, T.28 N., R.6 E., Snohomish County, Hydrologic Unit 17110011, at U.S. Highway 2 bridge on east side of Snohomish, and at mile 1.9 (3.1 km).

DRAINAGE AREA.--132 mi² (342 km²).

PERIOD OF RECORD.--Water years 1971, 1974, 1977 to current year.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978 23...	1410	135	81	7.7	10.3	35	1.0
NOV 13...	1440	252	83	7.2	3.5	35	2.0
DEC 18...	1510	450	67	7.2	4.3	40	3.0
JAN , 1979 09...	1400	E160	82	7.3	2.2	15	3.0
FEB 06...	1530	660	54	7.2	4.2	50	13
MAR 05...	1420	1900	29	6.4	5.7	115	100
APR 09...	1420	870	49	7.2	7.4	55	4.0
MAY 14...	1415	225	68	7.4	15.9	35	1.0
JUN 25...	1445	116	78	7.5	20.0	25	3.0
JUL 16...	1455	113	70	7.3	21.7	30	2.0
AUG 27...	1340	--	105	7.4	17.0	35	42
SEP 24...	1425	52	108	7.1	16.0	30	2.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978 23...	12.4	.27	.00	.010	.01	.03
NOV 13...	13.3	.78	.01	.010	.01	.03
DEC 18...	12.5	1.1	.01	.010	.01	.03
JAN , 1979 09...	14.0	.96	.00	.010	.00	.00
FEB 06...	13.3	.94	.05	.010	.00	.00
MAR 05...	12.7	.54	.03	.080	.01	.03
APR 09...	12.0	.72	.03	.020	.00	.00
MAY 14...	11.2	.38	.01	.010	.00	.00
JUN 25...	9.6	.33	.01	.010	.01	.03
JUL 16...	8.8	.37	.01	.010	.01	.03
AUG 27...	9.6	.30	.01	.140	.00	.00
SEP 24...	11.0	.29	.01	.000	.04	.12

12155500 SNOHOMISH RIVER AT SNOHOMISH, WA

LOCATION.--Lat 47°54'38", long 122°05'52", in NE¼SE¼ sec.13, T.28 N., R.5 E., Snohomish County, Hydrologic Unit 17110011, at former gaging station at old State Highway 9 bridge in Snohomish and at mile 12.7 (20.4 km).

DRAINAGE AREA.--1,714 mi² (4,439 km²).

PERIOD OF RECORD.--Water years 1959-71, 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1959 to September 1961.
pH: July 1959 to September 1961.
WATER TEMPERATURES: July 1959 to September 1961.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is fair.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978									
23...	1435	2850	60	7.2	10.0	25	2.0	10.8	.16
NOV									
13...	1500	6940	54	7.2	4.0	20	3.0	13.2	.42
DEC									
18...	1525	6860	52	7.1	3.9	30	3.0	12.7	.55
FEB , 1979									
06...	1545	8170	53	7.2	4.0	35	12	13.1	.64
MAR									
05...	1430	29000	32	6.6	5.2	75	60	13.1	.36
APR									
09...	1445	11900	42	7.2	6.8	40	5.0	12.4	.38
MAY									
14...	1435	12400	37	7.1	11.3	20	2.0	11.7	.15
JUN									
25...	1510	7280	35	7.3	15.5	10	2.0	10.3	.12
JUL									
16...	1535	5280	40	7.2	18.2	30	1.0	9.7	.11
AUG									
27...	1400	1590	65	7.4	18.5	30	2.0	8.7	.10
SEP									
24...	1450	1510	55	7.0	16.1	20	1.0	9.7	.15

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978								
23...	.02	.30	.32	.48	2.1	.010	.01	.03
NOV								
13...	.03	.27	.30	.72	3.2	.010	.01	.03
DEC								
18...	.01	.10	.11	.66	2.9	.010	.00	.00
FEB , 1979								
06...	.05	.27	.32	.96	4.3	.030	.00	.00
MAR								
05...	.03	.33	.36	.72	3.2	.050	.00	.00
APR								
09...	.02	.13	.15	.53	2.3	.020	.00	.00
MAY								
14...	.06	.05	.11	.26	1.2	.010	.00	.00
JUN								
25...	.04	.00	.00	.12	.53	.010	.01	.03
JUL								
16...	.01	.11	.12	.23	1.0	.000	.01	.03
AUG								
27...	.03	.00	.01	.11	.49	.040	.00	.00
SEP								
24...	.02	--	--	--	--	.010	.04	.12

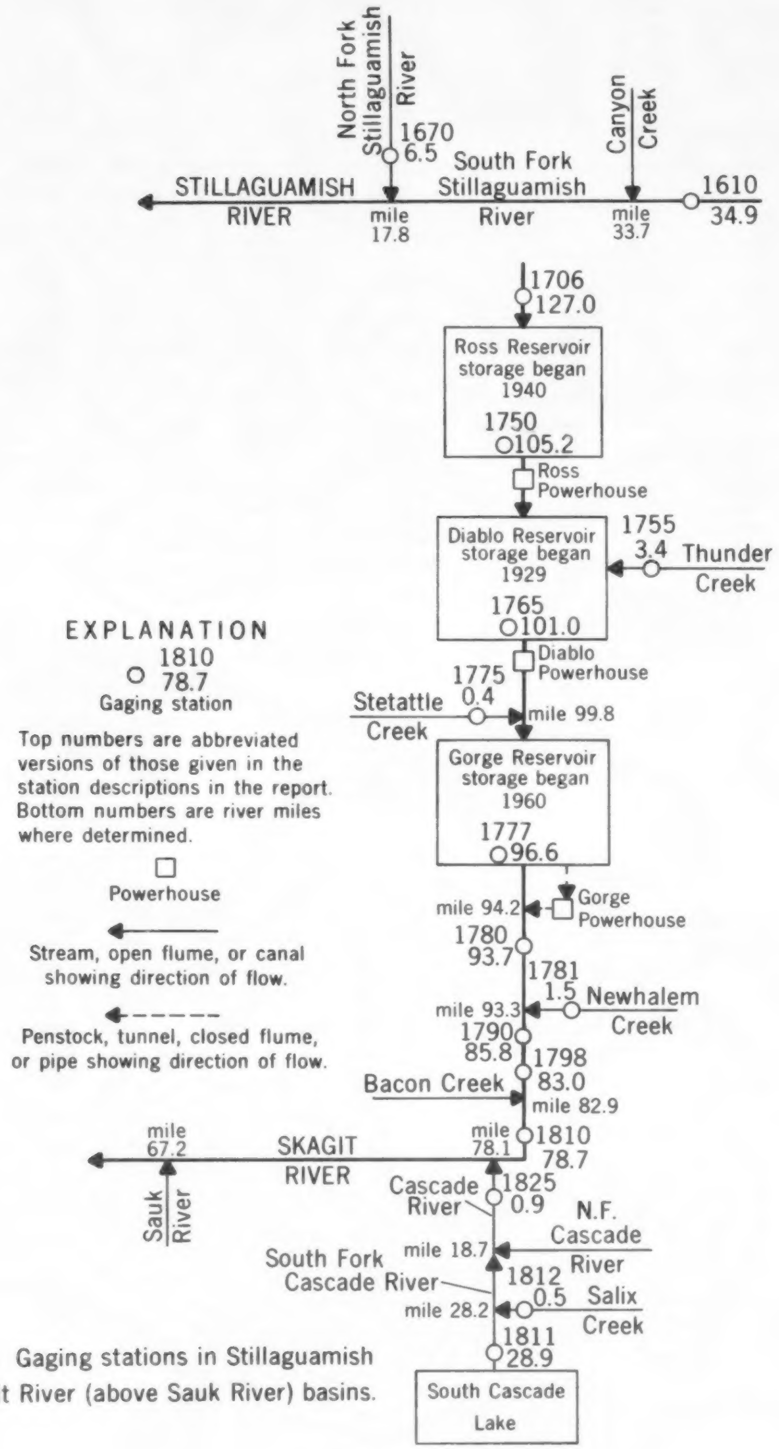

North Fork Stillaguamish River
1670
6.5
Canyon Creek
STILLAGUAMISH RIVER
mile 17.8
South Fork Stillaguamish River
mile 33.7
1610
34.9
1706
127.0
Ross Reservoir storage began 1940
1750
105.2
Ross Powerhouse
Diablo Reservoir storage began 1929
1765
101.0
1755
3.4
Thunder Creek
Diablo Powerhouse
1775
0.4
Stetattle Creek
mile 99.8
Gorge Reservoir storage began 1960
1777
96.6
mile 94.2
Gorge Powerhouse
1780
93.7
1781
1.5
Newhalem Creek
mile 93.3
1790
85.8
1798
83.0
Bacon Creek
mile 82.9
mile 67.2
SKAGIT RIVER
mile 78.1
1810
78.7
Sauk River
Cascade River
1825
0.9
N.F. Cascade River
mile 18.7
South Fork Cascade River
1812
0.5
Salix Creek
mile 28.2
1811
28.9
South Cascade Lake
EXPLANATION
1810
78.7
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 16. Gaging stations in Stillaguamish and Skagit River (above Sauk River) basins.

12161000 SOUTH FORK STILLAGUAMISH RIVER NEAR GRANITE FALLS, WA

LOCATION.--Lat 48°06'13", long 121°56'37", in SW¼NW¼ sec.8, T.30 N., R.7 E., Snohomish County, Hydrologic Unit 17110008, on right bank 0.3 mi (0.5 km) upstream from county road bridge, 1.2 mi (1.9 km) upstream from Canyon Creek, 1.6 mi (2.6 km) northeast of Granite Falls and at mile 34.9 (56.2 km).

DRAINAGE AREA.--119 mi² (308 km²).

PERIOD OF RECORD.-- December 1902 to July 1903 (gage heights only), July 1928 to current year. Published as "at Robe" 1902-3. Chemical analyses July 1959 to September 1966, October 1973 to September 1974.

REVISED RECORDS.--WSP 902: 1939. WSP 1286: 1929-31(M), 1932, 1935, 1937(M), 1939(P), 1940-41(M), 1943(P), 1947(P). WSP 1736: 1932-35(M), 1944(M), 1946-48(M), 1951(M), 1957(M). WSP 1932: 1938(P), 1945(P), 1950(P), 1956(P), 1959(P).

GAGE.--Water-stage recorder. Altitude of gage is 310 ft (94 m), from river-profile map. Prior to Aug. 31, 1928, nonrecording gage at site 8 mi (13 km) upstream at different datum. Aug. 31 to Sept. 30, 1928, nonrecording gage at present site and datum.

REMARKS.--Records good. Some small diversion for domestic use above station. No regulation. National Weather Service radio telemeter at station.

AVERAGE DISCHARGE.--51 years, 1,073 ft³/s (30.39 m³/s) 122.45 in/yr (3,110 mm/yr) 777,400 acre-ft/yr (959 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,400 ft³/s (918 m³/s) Feb. 26, 1932, gage height, 19.7 ft (6.00 m), from graph based on gage readings, from rating curve extended above 21,000 ft³/s (595 m³/s); minimum, 55 ft³/s (1.56 m³/s) Sept. 23, 24, 1938; minimum gage height, 2.99 ft (0.911 m) Aug. 19-21, 1941.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,700 ft³/s (246 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0315	*12,500	354	*12.24	3.731	Mar. 4	2315	10,600	300	11.30	3.444

Minimum discharge, 112 ft³/s (3.17 m³/s) Aug. 30, 31, gage height, 3.26 ft (0.994 ft).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	620	300	1120	290	210	761	500	1280	870	1380	174	130
2	500	376	723	270	200	625	515	1120	1040	1150	173	363
3	420	2000	1050.	260	195	573	530	1100	1100	748	166	658
4	360	6030	1550	240	190	3390	1120	1810	1040	615	162	534
5	320	1460	908	230	953	7120	1040	1850	1720	560	153	372
6	290	870	676	220	1750	6160	928	1840	1480	540	146	317
7	260	1320	551	205	1960	5110	844	1320	994	520	139	241
8	250	3460	478	195	1240	2040	921	1110	760	520	136	360
9	240	1350	496	190	3130	1110	1320	1040	748	530	134	1490
10	360	868	479	370	2100	970	973	889	814	1170	132	930
11	398	669	1550	463	1980	920	802	784	889	814	132	508
12	327	553	1010	368	3120	1060	844	778	850	2090	131	361
13	271	468	702	380	3430	980	2050	808	826	1060	127	284
14	240	409	749	317	1770	921	1400	941	664	706	129	239
15	220	370	710	252	1060	1220	941	1040	535	578	131	209
16	206	1670	570	224	827	1220	784	1110	530	528	125	190
17	196	2650	490	210	824	928	856	980	565	491	129	176
18	188	1290	454	198	1360	784	869	928	510	462	139	165
19	182	899	402	222	950	712	902	876	520	424	136	155
20	334	667	373	1270	734	694	760	863	620	390	137	150
21	395	549	418	1990	607	700	682	954	571	362	127	145
22	259	473	749	782	522	688	694	1060	510	316	149	138
23	221	420	949	563	477	706	778	1220	480	282	172	133
24	514	381	2740	467	567	754	850	1060	495	262	143	129
25	357	353	1080	397	2050	748	876	1020	576	246	129	125
26	281	324	740	351	2350	664	1040	1220	642	236	123	122
27	243	324	600	310	1560	593	1340	1380	615	229	120	122
28	230	637	462	270	1010	545	1420	1040	582	220	120	191
29	535	457	380	250	---	545	1440	766	593	207	116	164
30	465	1320	340	230	---	593	1360	637	615	188	113	139
31	344	---	310	220	---	550	---	682	---	178	120	---
TOTAL	10026	32917	23809	12204	37126	44384	29379	33506	22754	18002	4263	9240
MEAN	323	1097	768	394	1326	1432	979	1081	758	581	138	308
MAX	620	6030	2740	1990	3430	7120	2050	1850	1720	2090	174	1490
MIN	182	300	310	190	190	545	500	637	480	178	113	122
CFSM	2.71	9.22	6.45	3.31	11.1	12.0	8.23	9.08	6.37	4.88	1.16	2.59
IN.	3.13	10.29	7.44	3.81	11.61	13.87	9.18	10.47	7.11	5.63	1.33	2.89
AC-FT	19890	65290	47230	24210	73640	88040	58270	66460	45130	35710	8460	18330

CAL YR 1978 TOTAL 283477 MEAN 777 MAX 6030 MIN 138 CFSM 6.53 IN 88.62 AC-FT 562300
WTR YR 1979 TOTAL 277610 MEAN 761 MAX 7120 MIN 113 CFSM 6.40 IN 86.78 AC-FT 550600

12164510 SOUTH FORK STILLAGUAMISH RIVER AT ARLINGTON, WA

LOCATION.--Lat 48°12'03", long 122°07'04", in NE¼SE¼ sec.2, T.31 N., R.5 E., Snohomish County, Hydrologic Unit 17110008, at State Highway 530 bridge at northeast edge of Arlington.

DRAINAGE AREA.--255 mi² (660 km²).

PERIOD OF RECORD.--Water years 1974, 1977 to current year.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
24...	0900	940	68	7.5	9.1	35	3.0
NOV							
14...	0900	840	65	7.3	1.3	20	4.0
DEC							
19...	0900	680	58	7.3	2.9	50	8.0
JAN , 1979							
10...	0800	--	68	7.3	.6	15	7.0
FEB							
07...	0830	4270	31	7.0	1.6	90	120
MAR							
06...	0830	9800	23	6.5	5.0	105	100
APR							
10...	0915	2170	40	7.2	5.3	60	34
MAY							
15...	0830	1600	39	7.1	10.5	25	4.0
JUN							
26...	0845	900	41	7.4	14.5	15	3.0
JUL							
17...	0855	660	45	7.3	17.0	25	2.0
AUG							
28...	0920	200	80	7.7	16.8	15	1.0
SEP							
25...	0830	210	54	7.4	13.2	15	2.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
24...	10.0	.16	.02	.010	.01	.03
NOV						
14...	14.1	.37	.01	.010	.01	.03
DEC						
19...	13.1	.51	.01	.010	.00	.00
JAN , 1979						
10...	14.4	.42	.01	.030	.00	.00
FEB						
07...	14.0	.40	.04	.030	.00	.00
MAR						
06...	13.6	.21	.05	.050	.01	.03
APR						
10...	12.7	.30	.01	.050	.00	.00
MAY						
15...	11.0	.10	.00	.060	.00	.00
JUN						
26...	9.6	.07	.02	.000	.01	.03
JUL						
17...	--	.12	.03	.000	.01	.03
AUG						
28...	9.7	.08	.05	.000	.00	.00
SEP						
25...	9.7	.07	.02	.090	.04	.12

12166900 NORTH FORK STILLAGUAMISH RIVER AT CICERO, WA

LOCATION.--Lat 48°16'05", long 122°00'44", in NE¼NE¼ sec.15, T.32 N., R.6 E., Snohomish County, Hydrologic Unit 17110008, at State Highway 530 bridge, 3.0 mi (4.8 km) upstream from gaging station (12167000), 6.7 mi (10.8 km) northeast of Arlington.

DRAINAGE AREA.--262 mi² (679 km²).

PERIOD OF RECORD.--Water years 1961-71, 1974, 1977 to current year.

REMARKS.--Data prior to 1978 water year published as 12167000 North Fork Stillaguamish River near Arlington.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
24...	0920	1170	72	7.4	8.9	45	6.0
NOV							
14...	0925	1090	82	7.3	1.7	15	3.0
DEC							
19...	0925	1060	73	7.3	3.6	25	6.0
JAN , 1979							
10...	0840	610	80	7.5	2.4	5	4.0
FEB							
07...	0900	3440	41	7.1	2.0	65	50
MAR							
06...	0855	11000	29	6.6	5.0	--	--
APR							
10...	0935	2070	50	7.3	5.4	35	6.0
MAY							
15...	0850	1790	45	7.2	8.0	30	5.0
JUN							
26...	0910	E1400	55	7.5	12.2	15	2.0
JUL							
17...	0920	680	59	7.6	15.4	15	2.0
AUG							
28...	0945	246	97	7.8	15.0	15	1.0
SEP							
25...	0900	246	90	7.5	13.0	15	2.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
24...	10.9	.36	.02	.010	.01	.03
NOV						
14...	13.7	.47	.01	.020	.00	.00
DEC						
19...	12.9	.57	.01	.010	.00	.00
JAN , 1979						
10...	13.5	.46	.01	.030	.00	.00
FEB						
07...	13.5	.62	.02	.040	.00	.00
MAR						
06...	13.3	.26	.00	.040	.01	.03
APR						
10...	12.0	.32	.01	.010	.02	.06
MAY						
15...	11.6	.12	.00	.000	.00	.00
JUN						
26...	10.2	.08	.02	.000	.00	.00
JUL						
17...	9.8	.11	.06	.010	.01	.03
AUG						
28...	10.1	.07	.11	.000	.00	.00
SEP						
25...	10.2	.08	.03	.000	.00	.00

12167000 NORTH FORK STILLAGUAMISH RIVER NEAR ARLINGTON, WA

LOCATION.--Lat 48°15'42", long 122°02'47", in SE¼NW¼ sec.16, T.32 N., R.6 E., Snohomish County, Hydrologic Unit 17110008, on right bank 5.7 mi (9.2 km) northeast of Arlington, 7.8 mi (12.6 km) downstream from Deer Creek, and at mile 6.5 (10.5 km).

DRAINAGE AREA.--262 mi² (679 km²).

PERIOD OF RECORD.--July 1928 to current year. Chemical analyses November 1961 to September 1971, October 1973 to September 1974.

REVISED RECORDS.--WSP 1286: 1938-39. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 89.34 ft (27.231 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of no gage-height record, May 28 to July 10, which are fair. No regulation. Small diversions for domestic use. National Weather Service radio telemeter at station.

AVERAGE DISCHARGE.--51 years, 1,893 ft³/s (53.61 m³/s) 98.12 in/yr (2,492 mm/yr), 1,371,000 acre-ft/yr (1,690 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,600 ft³/s (867 m³/s) Feb. 9, 1951; maximum gage height, 13.46 ft (4.103 m) Feb. 10, 11, 1951; minimum discharge, 117 ft³/s (3.31 m³/s) Sept. 23, 1938; minimum gage height, 0.97 ft (0.296 m) Sept. 10, 12, 1944.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,000 ft³/s (368 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0400	14,400	408	9.45	2.880	Mar. 5	0300	*17,100	484	*10.12	3.085

Minimum discharge, 234 ft³/s (6.63 m³/s) Aug. 30, gage height, 1.96 ft (0.597 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1080	591	2320	860	570	1930	1120	2450	1680	2480	327	250
2	930	722	1570	800	565	1610	1210	2200	1900	2000	322	406
3	827	2290	2200	760	560	1460	1280	2050	2000	1500	314	816
4	760	8770	2960	720	560	4600	2990	3370	1920	1220	308	903
5	787	3070	1080	680	1610	12300	2700	3290	3100	1160	297	649
6	658	2010	1490	650	2460	10700	2230	3170	2550	1120	288	614
7	617	2610	1260	640	3420	9550	1860	2350	1800	1080	280	425
8	504	6170	1140	630	2150	4720	1810	2120	1520	1080	274	735
9	559	2800	1110	620	4240	3190	2360	1830	1400	1120	270	1780
10	658	1930	1090	810	3340	2610	2050	1610	1580	2300	270	1210
11	1130	1500	3620	906	3490	2410	1720	1430	1650	1190	270	695
12	722	1360	2520	826	5700	2550	1570	1440	1590	1150	264	522
13	623	1220	1750	1060	6650	2210	3910	1570	1520	929	261	445
14	571	1090	1740	850	3690	2110	3940	1680	1380	781	270	400
15	541	1010	1610	754	2420	2970	2630	1770	1180	714	270	375
16	505	1510	1480	695	1930	2910	2070	1960	1150	698	261	355
17	481	3210	1250	660	1780	2150	2120	1600	1230	685	274	335
18	457	2340	1170	636	2730	1800	2070	1560	1130	668	283	318
19	434	1740	1060	681	2290	1630	1940	1480	1160	641	280	310
20	630	1400	1010	1270	1860	1600	1660	1490	1320	616	292	306
21	665	1240	1030	2640	1570	1580	1550	1700	1220	590	272	302
22	505	1130	1480	1410	1360	1540	1560	1930	1100	542	299	294
23	463	1050	1040	1110	1250	1570	1690	2200	1060	496	357	286
24	850	986	5140	1010	1260	1650	1820	1990	1100	465	294	278
25	623	946	2530	890	3060	1580	1830	1930	1220	449	264	278
26	523	880	1070	820	5160	1380	2010	2200	1380	439	253	278
27	499	874	1590	760	3450	1240	2500	2480	1300	431	250	276
28	499	1240	1290	680	2450	1130	2740	1900	1240	416	246	450
29	835	1050	1100	640	---	1160	2680	1500	1270	401	242	345
30	842	2240	990	610	---	1170	2570	1300	1550	361	238	298
31	651	---	910	590	---	1100	---	1600	---	336	242	---
TOTAL	20429	58979	53990	26664	71575	90110	64190	61010	45200	28058	8632	14924
MEAN	659	1966	1742	860	2556	2907	2140	1968	1507	905	278	497
MAX	1130	8770	5140	2640	6650	12300	3940	3370	3100	2480	357	1780
MIN	434	591	910	590	560	1100	1120	1300	1060	336	238	250
CFSM	2.52	7.50	6.65	3.28	9.76	11.1	8.17	7.51	5.75	3.45	1.06	1.90
IN.	2.90	8.37	7.67	3.79	10.16	12.79	9.11	8.66	6.42	3.98	1.23	2.12
AC-FT	40520	117000	107100	52890	142000	178700	127300	121000	89650	55650	17120	29600

CAL YR 1978 TOTAL 525594 MEAN 1440 MAX 8770 MIN 290 CFSM 5.50 IN 74.63 AC-FT 1043000
WTR YR 1979 TOTAL 543761 MEAN 1490 MAX 12300 MIN 238 CFSM 5.69 IN 77.21 AC-FT 1079000

12167700 STILLAGUAMISH RIVER NEAR SILVANA, WA

LOCATION.--Lat 48°11'48", long 122°12'33", in SW¼SE¼ sec.6, T.31 N., R.5 E., Snohomish County, Hydrologic Unit 17110008, at south bound bridge on U.S. Highway I-5, 1.5 mi (2.4 km) east of Silvana, 6.7 mi (10.8 km) downstream from confluence of North and South Forks of Stillaguamish River, and at mile 11.1 (17.9 km).

DRAINAGE AREA.--557 mi² (1,443 km²).

PERIOD OF RECORD.--Water years 1959-71, 1974, 1977 to current year.

REMARKS.--Water discharge from rating; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
24...	0830	1050	79	7.3	9.3	30	2.0
NOV							
14...	0830	1790	84	7.3	.9	20	4.0
DEC							
19...	0830	1920	69	7.1	3.4	40	8.0
FEB , 1979							
07...	0800	9500	37	7.1	1.6	85	120
MAR							
06...	0810	14700	27	6.8	5.5	110	100
APR							
10...	0840	4600	48	7.1	5.8	45	9.0
MAY							
15...	0800	3500	43	7.0	10.7	30	4.0
JUN							
26...	0805	1800	52	7.7	15.6	20	10
JUL							
17...	0830	1760	57	7.3	18.2	25	4.0
AUG							
28...	0900	562	94	7.5	17.2	20	1.0
SEP							
25...	0810	605	75	7.4	14.3	25	2.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
24...	10.2	.14	.01	.020	.01	.03
NOV						
14...	13.6	.44	.01	.010	.03	.09
DEC						
19...	12.0	.54	.01	.010	.00	.00
FEB , 1979						
07...	13.9	.56	.09	.040	.00	.00
MAR						
06...	13.3	.25	.04	.050	.01	.03
APR						
10...	12.3	.36	.01	.010	.00	.00
MAY						
15...	10.7	.13	.03	.010	.00	.00
JUN						
26...	8.8	.09	.02	.030	.00	.00
JUL						
17...	8.4	.09	.03	.010	.01	.03
AUG						
28...	9.3	.08	.03	.020	.00	.00
SEP						
25...	9.1	.06	.03	.010	.00	.00

12170600 SKAGIT RIVER AT INTERNATIONAL BOUNDARY, NEAR HOPE, BRITISH COLUMBIA
(International gaging station)

LOCATION.--Lat 49°00'01", long 121°04'15", on left bank at international boundary, approximately 31 mi (50 km) southeast of Hope, and at mile 127.0 (204.3 km).

DRAINAGE AREA.--361 mi² (987 km²), of which 3 mi² (7.8 km²) is in the United States.

PERIOD OF RECORD.--December 1953 to current year (gage heights or elevations only).

GAGE.--Water-stage recorder. Datum of gage is 1,583.44 ft (482.633 m) National Geodetic Vertical Datum of 1929; 1,582.53 ft (482.355 m) above Geodetic Survey of Canada 1959 datum; 1,584.07 ft (482.825 m) above city of Seattle 1936 datum; and 1,581.65 ft (482.087 m) above city of Seattle Ross Dam datum (by water level transfer in 1955). Prior to Apr. 15, 1955, nonrecording gage at present site and datum. Apr. 15, 1955 to Dec. 6, 1960, water-stage recorder at site 300 ft (91 m) upstream at present datum.

REMARKS.--No diversion above station. Stage subject to backwater from Ross Reservoir. Starting about July 1, 1967, the taintor gates at Ross Dam were extended to elevation, 1,602.50 ft (488.442 m) city of Seattle Ross Dam datum.

COOPERATION.--This station is maintained by Canada under agreement with the United States.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 21.48 ft (6.547 m) July 31, 1978; minimum observed, 1.25 ft (0.381 m) Mar. 5, 1955.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 20.91 ft (6.373 m) July 31; minimum not determined.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.17	15.80	7.99	4.20				---	6.27	15.00	20.85	18.93
2	19.23	15.48	7.80	4.52				---	6.48	15.40	20.84	19.18
3	19.17	15.23	7.12	4.69				---	6.78	15.69	20.82	19.46
4	18.90	15.63	6.72	4.65				---	6.90	16.02	20.80	19.46
5	18.86	15.89	6.31	---				---	6.85	16.42	20.80	19.30
6	18.75	15.78	6.19	---				---	6.79	16.84	20.70	19.20
7	18.75	15.87	5.96	---				---	6.58	17.31	20.70	19.17
8	18.90	17.08	5.76	---				---	6.40	17.85	20.72	19.15
9	18.90	17.53	5.58	---				---	6.38	18.36	20.69	19.24
10	18.90	17.33	5.46	---				---	6.51	18.90	20.72	19.27
11	18.90	16.97	5.40	---				---	6.64	19.42	20.80	19.09
12	18.93	16.52	5.33	---				---	6.81	19.79	20.80	18.88
13	18.76	16.00	5.22	---				---	6.94	20.12	20.82	18.66
14	18.68	15.58	5.06	---				---	6.96	20.37	20.80	18.43
15	18.63	15.09	4.95	---				6.52	7.11	20.64	20.68	18.36
16	18.61	14.77	4.86	---				6.57	7.42	20.77	20.55	18.43
17	18.55	14.50	4.79	---				6.50	7.87	20.69	20.32	18.40
18	18.46	14.12	4.72	---				6.47	8.29	20.66	20.08	18.06
19	18.33	13.71	4.65	---				6.44	8.57	20.65	20.15	17.82
20	18.21	13.20	4.57	---				6.40	8.79	20.72	20.28	17.57
21	18.10	12.65	4.51	---				6.40	9.21	20.82	20.20	17.29
22	17.96	11.76	4.46	---				6.61	9.60	20.85	20.15	17.09
23	17.82	11.28	4.46	---				6.86	10.10	20.84	20.26	17.05
24	17.63	10.94	4.42	---				7.00	10.67	20.77	20.42	16.85
25	17.44	10.55	4.39	---				7.05	11.22	20.68	20.25	16.57
26	17.18	10.26	4.37	---				7.16	11.83	20.72	20.08	16.24
27	16.89	9.69	4.33	---				7.16	12.45	20.83	19.95	15.94
28	16.78	9.04	4.27	---				6.81	13.10	20.78	19.57	15.84
29	16.75	8.71	4.20	---				6.50	13.76	20.75	19.12	15.76
30	16.57	8.41	4.16	---				6.30	14.43	20.77	18.90	15.61
31	16.20	---	4.18	---				6.22	---	20.82	18.89	---
MEAN	18.23	13.86	5.23	---				---	8.59	19.36	20.35	18.01
MAX	19.23	17.53	7.99	---				---	14.43	20.85	20.85	19.46
MIN	16.20	8.41	4.16	---				---	6.27	15.00	18.89	15.61

12175000 ROSS RESERVOIR NEAR NEWHALEM, WA
(International gaging station)

LOCATION.--Lat 48°43'58", long 121°04'02", in SE¼ sec.35, T.38 N., R.13 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, at Ross Dam on Skagit River 1.0 mi (1.6 km) downstream from Ruby Creek, 9.1 mi (14.5 km) northeast of Newhalem, and at mile 105.2 (169.3 km).

DRAINAGE AREA.--999 mi² (2,587 km²), of which 400 mi² (1,036 km²) is in Canada.

PERIOD OF RECORD.--March 1940 to current year (monthend elevations and contents only prior to October 1946). Prior to October 1945, published as Ruby Reservoir near Newhalem.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 0.00 ft (0.000 m), city of Seattle Ross Dam datum; 1.79 ft (0.546 m) National Geodetic Vertical Datum of 1929; and 0.88 ft (0.268 m) Geodetic Survey of Canada 1959 datum (by water level transfer of elevation from the international boundary). Prior to Sept. 24, 1940, nonrecording gage on west shore at site just uplake from Ross Dam at same datum. Sept. 24, 1940, to June 28, 1943, water-stage recorder at present site and datum. June 29, 1943, to Apr. 29, 1948, nonrecording gage on right bank at site 500 ft (152 m) uplake from dam at present datum.

REMARKS.--Reservoir is formed by concrete arch dam completed to elevation 1,615 ft (492.3 m) in 1949, storage began Mar. 11, 1940. Starting about July 1, 1957, taintor gates were extended to elevation, 1,602.50 ft (488.44 m). Usable storage, 1,052,300 acre-ft (1,300 hm³) between elevations 1,475 ft (449.6 m), lower limit of operation, and 1,602.5 ft (488.44 m), top of taintor gates. Dead storage below elevation, 1,250 ft (381 m), 1,175 acre-ft (1.45 hm³). Water used for power and to supplement low flow of Skagit River through city of Seattle's Diablo and Gorge powerplants. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by city of Seattle. This station is maintained by the United States under agreement with Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,441,900 acre-ft (1,780 hm³) Aug. 1, 1978, elevation, 1,603.10 ft (488.625 m); minimum observed since dam was completed in 1949, 51,760 acre-ft (63.8 hm³) Apr. 5, 1952, elevation, 1,348.50 ft (411.023 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,435,702 acre-ft (1,770 hm³) July 31, elevation, 1,602.58 ft (488.406 m); minimum, 625,396 acre-ft (771 hm³) Mar. 5, elevation, 1,517.83 ft (462.635 m).

Capacity table (elevation, in feet, and total contents, in acre-feet)
(Based on 25-foot contour intervals furnished by City of Seattle in 1943)

1,474	378,000	1,525	679,000	1,575	1,130,200
1,500	509,200	1,550	888,300	1,603	1,440,700

ELEVATION, IN FEET NGVD, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1600.88	1597.42	1588.67	1567.22	1534.33	1518.07	1526.64	1533.48	1573.64	1596.82	1602.48	1600.64
2	1600.87	1597.00	1588.17	1565.55	1533.20	1518.64	1526.51	1535.47	1575.13	1597.21	1602.49	1600.98
3	1600.78	1596.93	1587.52	1564.05	1532.52	1518.19	1526.51	1537.25	1576.85	1597.49	1602.49	1601.17
4	1600.59	1597.50	1586.67	1562.73	1532.12	1517.97	1526.51	1539.33	1578.49	1597.87	1602.41	1601.02
5	1600.51	1597.56	1585.50	1561.55	1531.28	1517.87	1526.50	1541.36	1579.84	1598.28	1602.41	1600.93
6	1600.39	1597.35	1584.46	1561.36	1530.18	1518.78	1526.35	1543.13	1581.01	1598.71	1602.35	1600.87
7	1600.46	1597.76	1583.50	1560.76	1529.20	1520.19	1526.29	1544.35	1581.76	1599.20	1602.37	1600.83
8	1600.64	1599.20	1582.83	1559.75	1528.74	1521.00	1526.35	1545.57	1582.46	1599.75	1602.39	1600.80
9	1600.68	1599.33	1582.52	1558.48	1528.41	1521.39	1526.13	1546.42	1583.30	1600.17	1602.34	1600.97
10	1600.62	1599.03	1582.10	1557.18	1527.91	1521.96	1525.96	1547.16	1584.43	1600.79	1602.36	1600.90
11	1600.67	1598.61	1581.38	1555.95	1527.55	1522.33	1526.07	1547.97	1585.43	1601.26	1602.47	1600.71
12	1600.52	1598.10	1580.46	1554.73	1527.34	1522.63	1526.12	1548.79	1586.39	1601.64	1602.44	1600.46
13	1600.42	1597.53	1579.48	1553.66	1527.24	1522.75	1526.06	1549.76	1587.11	1601.88	1602.48	1600.29
14	1600.39	1597.08	1578.90	1552.89	1526.44	1523.22	1526.36	1550.67	1587.52	1602.16	1602.38	1600.04
15	1600.35	1596.54	1578.06	1551.43	1526.00	1523.45	1526.64	1551.83	1588.11	1602.44	1602.33	1600.06
16	1600.29	1596.37	1577.57	1550.00	1525.27	1523.77	1526.30	1553.29	1588.63	1602.46	1602.08	1600.15
17	1600.21	1596.09	1577.21	1548.95	1524.93	1524.14	1526.16	1554.64	1589.26	1602.33	1601.88	1599.95
18	1600.11	1595.73	1576.68	1547.81	1524.87	1524.33	1526.04	1555.84	1589.67	1602.30	1601.71	1599.62
19	1599.97	1595.30	1575.76	1546.85	1524.25	1524.61	1526.17	1556.99	1590.08	1602.28	1601.91	1599.37
20	1599.83	1594.62	1574.98	1546.84	1523.83	1524.68	1526.38	1558.18	1590.57	1602.32	1601.94	1599.14
21	1599.74	1593.98	1574.36	1546.56	1523.20	1524.94	1526.16	1559.35	1590.99	1602.45	1601.88	1598.88
22	1599.57	1593.22	1573.95	1545.68	1522.52	1525.12	1526.22	1560.51	1591.42	1602.49	1601.88	1598.76
23	1599.36	1592.79	1573.77	1545.06	1521.79	1525.38	1526.32	1562.24	1591.97	1602.43	1602.04	1598.75
24	1599.24	1592.44	1573.70	1544.41	1521.17	1525.65	1526.41	1563.95	1592.59	1602.38	1602.11	1598.36
25	1599.05	1592.08	1573.62	1543.05	1521.07	1525.64	1526.65	1565.01	1593.11	1602.24	1601.77	1598.05
26	1598.73	1591.72	1572.96	1541.42	1520.40	1525.82	1527.03	1567.01	1593.78	1602.39	1601.75	1597.72
27	1598.51	1590.91	1572.48	1540.51	1519.89	1526.18	1527.36	1569.74	1594.39	1602.40	1601.45	1597.45
28	1598.44	1590.37	1571.50	1539.38	1519.27	1526.26	1528.55	1571.01	1595.08	1602.38	1601.08	1597.52
29	1598.44	1589.70	1570.37	1537.70	---	1526.19	1530.11	1571.74	1595.67	1602.41	1600.58	1597.31
30	1598.12	1589.22	1569.30	1536.62	---	1526.20	1531.68	1572.23	1596.35	1602.36	1600.55	1597.31
31	1597.76	---	1568.16	1535.17	---	1526.18	---	1572.82	---	1602.58	1600.56	---
MEAN	1599.87	1595.38	1578.27	1551.07	1526.25	1523.04	1526.75	1554.15	1587.17	1601.09	1601.97	1599.63
MAX	1600.88	1599.33	1588.67	1567.22	1534.33	1526.26	1531.68	1572.82	1596.35	1602.58	1602.49	1601.17
MIN	1597.76	1589.22	1568.16	1535.17	1519.27	1517.87	1525.96	1533.48	1573.64	1596.82	1600.55	1597.31
†	1,379,340	1,283,042	1,060,300	760,331	635,872	688,082	731,731	1,107,646	1,363,190	1,435,702	1,411,852	1,374,165
‡	-346,618	-96,298	-222,742	-299,969	-124,459	+52,210	+43,649	+375,915	+255,544	+72,512	-23,850	-37,687

CAL YR 1978:........................‡ -171,613
WTR YR 1979:........................‡ -39,793

† Total contents, at end of month.
‡ Change in contents, at end of month.

12175500 THUNDER CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°40'22", long 121°04'18", in SE¼ sec.23, T.37 N., R.13 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi (0.6 km) upstream from high-water line of Diablo Reservoir 9.0 mi (14.5 km) east of Newhalem, and at mile 3.4 (5.5 km).

DRAINAGE AREA.--105 mi² (272 km²).

PERIOD OF RECORD.-- October 1930 to current year. Published as "above Colonial Creek, near Marblemount" 1930-31.

REVISED RECORDS.--WSP 1012: 1943. WSP 1286: 1931(M), 1932, 1933(M), 1935(M), 1938-39(M), 1941-42(M), 1944-46(M), 1950(M), 1952 (annual runoff in acre-ft). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,220 ft (371.9 m), from river-profile map.

REMARKS.--Records good except for periods of ice effect, Dec. 29 to Jan. 16 and Jan. 26 to Feb. 6, which are fair. Large diurnal fluctuations caused by snowmelt during summer months.

AVERAGE DISCHARGE.--49 years, 616 ft³/s (17.45 m³/s) 79.67 in/yr (2,024 mm/yr), 446,300 acre-ft/yr (550 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) Oct. 25, 1955, gage height, 12.68 ft (3.865 m), from rating curve extended above 3,500 ft³/s (99.1 m³/s); minimum not determined, probably less than 50 ft³/s (1.42 m³/s) during period of ice effect or no gage-height record in February 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Records for floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 2,400 ft³/s (68.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0200	2,500	70.8	7.12	2.170	Nov. 7	2300	*5,140	146	*9.39	2.862

Minimum daily discharge, 65 ft³/s (1.84 m³/s) Feb. 4 during period of ice effect.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	542	187	163	96	68	91	206	875	894	900	1130	952
2	438	190	155	93	67	88	198	898	1170	653	1060	1400
3	404	416	153	89	66	85	188	846	1350	564	957	1100
4	372	1230	156	86	65	97	186	1090	1380	697	883	744
5	344	478	150	83	69	194	186	1010	1490	896	854	695
6	348	377	141	80	73	603	192	836	1050	1010	748	718
7	364	2230	139	77	77	925	190	678	743	1020	740	762
8	375	2360	137	75	77	668	192	580	673	1130	796	1110
9	421	912	133	73	85	472	194	520	750	1170	908	893
10	600	615	129	70	81	373	192	488	984	1550	1060	808
11	520	484	157	68	83	337	188	458	1190	1160	1040	506
12	344	419	169	76	89	332	184	474	1170	1030	1030	490
13	304	364	145	84	123	325	188	543	985	835	1130	563
14	326	328	142	83	132	317	190	635	719	828	1120	720
15	358	303	138	81	108	342	186	704	656	981	982	815
16	370	290	135	85	98	361	182	855	673	1160	974	719
17	365	280	125	78	92	340	182	748	622	1410	1020	648
18	359	259	122	77	92	317	180	728	598	1510	853	717
19	352	233	118	76	89	295	176	687	634	1500	780	714
20	413	221	116	81	85	285	170	607	586	1600	841	701
21	296	209	117	86	82	280	168	839	605	1490	1070	723
22	234	204	122	80	80	277	170	1020	665	1210	1210	584
23	245	199	121	77	78	280	184	1300	708	1140	1000	535
24	499	194	143	76	77	297	210	1280	764	1150	968	575
25	272	187	130	75	86	305	240	1260	919	1230	975	602
26	226	180	124	74	97	297	295	1520	1030	1320	936	588
27	275	175	126	73	98	280	430	1220	1060	1390	924	530
28	241	175	118	72	95	262	668	818	1090	1160	962	695
29	234	165	111	71	---	247	794	635	1250	965	1040	475
30	286	168	108	70	---	230	888	581	1130	920	1050	421
31	192	---	108	69	---	218	---	670	---	1090	989	---
TOTAL	10845	14032	4141	2429	2402	9820	7607	25493	27467	34629	30030	21315
MEAN	350	468	134	78.4	85.8	317	257	822	916	1117	969	711
MAX	600	2360	169	96	132	925	888	1520	1490	1600	1210	1400
MIN	192	165	108	68	65	85	168	458	586	564	740	421
CFSM	3.33	4.46	1.28	.75	.82	3.02	2.45	7.83	8.72	10.6	9.23	6.77
IN.	3.84	4.97	1.47	.86	.85	3.48	2.73	9.03	9.73	12.27	10.64	7.55
AC-FT	21510	27830	8210	4820	4760	19480	15270	50570	54480	68690	59560	42290

CAL YR 1978 TOTAL 214855 MEAN 589 MAX 2380 MIN 100 CFSM 5.61 IN 76.12 AC-FT 426200
WTR YR 1979 TOTAL 190300 MEAN 521 MAX 2360 MIN 65 CFSM 4.96 IN 67.42 AC-FT 377500

12177500 STETATTLE CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°43'20", long 121°08'58", in NE¼ sec.6, T.37 N., R.13 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on left bank 5.5 mi (8.8 km) northeast of Newhalem and at mile 0.4 (0.6 km).

DRAINAGE AREA.--22.0 mi² (57.0 km²).

PERIOD OF RECORD.--December 1913 to November 1915 (fragmentary), September 1933 to current year. Published as "near Marblemount" 1913-15.

REVISED RECORDS.--WSP 1316: 1935(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 906.55 ft (276.310 m) city of Seattle datum. Dec. 19, 1913, to Nov. 14, 1915, nonrecording gage at site about 0.3 mi (0.5 km) downstream at different datum. Sept. 7, 1933, to Aug. 26, 1937, water-stage recorder at site 750 ft (229 m) upstream at datum 1.69 ft (0.515 m) higher. Aug. 27, 1937, to Nov. 20, 1957, water-stage recorder at site 600 ft (183 m) upstream at present datum.

REMARKS.--Records good except those for period of no gage-height record Dec. 29 to Jan. 17, Apr. 4-26 and May 1-22, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--46 years (water years 1934-79) 184 ft³/s (5.211 m³/s), 113.58 in/yr (2,885 mm/yr), 133,300 acre-ft/yr (164 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,580 ft³/s (243 m³/s) Nov. 26, 1949, gage height, 9.70 ft (2.957 m), from rating curve extended above 1,600 ft³/s (45.3 m³/s) on basis of slope-area measurement of peak flow; minimum, 9 ft³/s (0.255 m³/s) Nov. 9-11, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 970 ft³/s (27.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0100	2,930	83.0	4.84	1.475	Mar. 7	0500	1,130	32.0	3.59	1.094
Nov. 7	2000	*2,950	83.5	*4.85	1.478						

Minimum daily discharge, 16 ft³/s (0.453 m³/s) Jan. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	85	44	26	17	56	68	424	365	202	119	85
2	105	95	48	25	17	51	64	410	476	192	113	168
3	91	396	41	24	17	48	61	388	478	154	105	157
4	81	796	47	23	17	108	59	554	434	182	96	137
5	75	232	43	23	26	388	61	428	554	225	89	105
6	72	168	39	22	22	869	62	368	321	239	81	93
7	71	1220	36	21	40	828	64	304	211	232	88	83
8	69	620	34	20	31	568	66	246	225	270	83	149
9	89	266	33	20	66	326	67	195	296	243	88	232
10	176	172	33	20	73	214	65	168	375	407	96	117
11	162	130	55	19	73	192	61	145	412	266	96	85
12	115	110	50	21	80	198	59	148	305	220	93	69
13	91	91	41	23	109	171	65	240	286	176	98	65
14	86	78	41	21	140	165	70	290	192	174	98	67
15	81	70	40	19	104	214	65	368	171	195	83	69
16	75	71	41	17	83	208	63	452	185	208	88	62
17	74	75	37	16	70	157	69	330	204	225	91	56
18	72	66	34	17	65	132	67	290	208	232	81	59
19	69	59	31	17	57	119	64	288	208	236	72	59
20	119	53	29	22	51	119	62	278	192	239	74	60
21	80	49	31	36	47	122	61	348	185	214	93	54
22	64	47	40	28	42	126	64	398	198	171	107	48
23	140	45	40	25	39	148	69	476	204	157	102	44
24	105	43	67	23	37	162	88	446	221	149	88	44
25	93	41	56	21	56	157	150	446	274	149	83	45
26	75	38	45	20	75	135	250	512	299	154	81	44
27	95	38	40	20	73	115	380	355	308	149	85	61
28	100	41	33	19	63	102	464	225	298	132	78	89
29	117	38	31	18	---	91	470	168	206	113	75	48
30	98	45	29	16	---	83	423	168	308	109	75	48
31	88	---	27	17	---	75	---	262	---	117	72	---
TOTAL	3043	5286	1242	661	1668	6423	3709	10038	8889	6219	2755	2502
MEAN	98.2	176	40.1	21.3	59.6	207	124	324	296	201	88.9	83.4
MAX	185	1220	67	36	140	869	470	554	554	407	119	232
MIN	64	38	27	16	17	48	59	145	171	109	72	44
CFSM	4.46	8.00	1.82	.97	2.71	9.41	5.64	14.7	13.4	9.14	4.04	3.79
IN.	5.15	8.94	2.10	1.12	2.82	10.86	6.27	16.97	14.89	10.52	4.66	4.23
AC-FT	6040	10480	2460	1310	3310	12740	7360	19910	17630	12340	5460	4960

CAL YR 1978 TOTAL 61481 MEAN 168 MAX 1220 MIN 27 CFSM 7.64 IN 103.95 AC-FT 121900
WTR YR 1979 TOTAL 52355 MEAN 143 MAX 1220 MIN 16 CFSM 6.50 IN 88.52 AC-FT 103800

12178000 SKAGIT RIVER AT NEWHALEM, WA

LOCATION.--Lat 48°40'19", long 121°14'48", in SW¼SE¼ sec. 21, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.4 mi (0.6 km) upstream from Newhalem Creek, 0.5 mi (0.8 km) downstream from city of Seattle powerplant at Newhalem, 10.8 mi (17.4 km) upstream from Bacon Creek, and at mile 93.7 (150.8 km).

DRAINAGE AREA.--1,175 mi² (3,043 km²), of which 400 mi² (1,036 km²) is in Canada.

PERIOD OF RECORD.--October 1908 to May 1914 and October 1920 to current year in reports of Geological Survey. June 1914 to September 1920 (monthly discharge only), in State Water-Supply Bulletin 6. Published as "near Marblemount" 1908-14, 1920-31. Chemical analyses water years 1974, 1977.

REVISED RECORDS.--WSP 512: 1909-14. WSP 1012: 1929. WSP 1316: 1914(M). WSP 1932; Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 401.5 ft (122.38 m) National Geodetic Vetical Datum of 1929 (river-profile survey). Prior to May 24, 1914, nonrecording gages at site 0.5 mi (0.8 km) upstream at datum 91 ft (127.7 m) higher. Nov. 15, 1920 to June 4, 1923, nonrecording gage at site about 500 ft (152 m) upstream at same datum.

REMARKS.--Records excellent. Water is diverted 2.9 mi (4.7 km) above station and is returned to river at Seattle powerplant 0.5 mi (0.8 km) above station. Flow regulated for power at Gorge Dam since August 1924 and by Diablo, Ross, and Gorge Reservoirs (see sta 12175000, 12176500, and 12177700), having a combined total capacity of 1,533,000 acre-ft (1,890 hm³).

AVERAGE DISCHARGE.--71 years (water years 1909-79), 4,468 ft³/s (126 m³/s) 3,237,000 acre-ft/yr (3,990 hm³/yr), adjusted for storage in Diablo Reservoir since October 1929, Ross Reservoir since March 1940, and Gorge Reservoir since June 1960.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 63,500 ft³/s (1,800 m³/s) Nov. 29, 1909, gage height, 22.0 ft (6.71 m) from floodmark, site and datum then in use; minimum, 54 ft³/s (1.53 m³/s) Nov. 1, 1943, gage height, 78.15 ft (23.820 m); minimum daily, 136 ft³/s (3.85 m³/s) Aug. 24, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1815 reached a stage of approximately 20.5 ft (6.25 m), discharge about 115,000 ft³/s (3,260 m³/s). Records for other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,700 ft³/s (360 m³/s) Jan. 3, gage height, 86.97 ft (26.508 m); minimum, 949 ft³/s (26.9 m³/s) Jan. 7, gage height, 80.67 ft (24.588 m); minimum daily, 1,030 ft³/s (29.2 m³/s) Oct. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1620	3040	4120	6190	4930	2620	2310	2710	4240	3000	3150	1970
2	2810	3810	4410	7060	5670	2580	2310	2600	2470	1930	2930	1690
3	2780	3800	4920	8250	3400	2310	2310	2090	1660	1390	2500	2820
4	3130	4190	6210	7940	2460	2400	2320	2730	3060	1660	2370	3790
5	2550	2580	6960	7190	4420	2850	2320	2540	3840	1760	2810	3750
6	2300	3920	6940	4510	5420	3750	2320	2800	3170	2090	2820	3120
7	1390	5120	6960	1670	4940	2870	2310	2890	2880	2020	2610	3670
8	1030	6990	5710	5560	2880	3820	2320	2190	2530	2020	2150	1230
9	1460	6880	3700	5500	2350	2470	2310	2470	1680	2060	2930	1260
10	2560	6870	3730	7130	2360	2330	2310	2070	2080	2840	2460	3630
11	2590	6870	5980	6750	2680	2330	2310	1860	3880	2400	1880	3160
12	2530	6870	5730	6890	2580	2350	2320	1710	3680	1920	2390	3080
13	2360	6870	6840	6600	3860	2630	2330	1720	3820	2320	2850	3480
14	1550	5500	5260	5300	3750	2330	2320	2010	2970	1950	3410	3270
15	1280	5230	5590	6110	4100	2360	2310	1870	2460	2000	4170	1630
16	2610	5040	3900	6970	2020	2320	2310	2630	2100	4870	4170	1240
17	2380	4330	3710	6190	3000	2310	2230	2450	2620	5530	4960	3780
18	2210	4490	4610	6230	2350	2310	2020	2150	2620	5700	3080	3950
19	2110	4740	5020	4650	2890	2300	2010	1720	2800	4670	1040	2850
20	2630	5960	5230	1780	2990	2310	2020	1930	2860	5070	2350	4170
21	1930	5870	4550	2330	2520	2570	2010	2690	2410	3540	3110	4280
22	2270	6210	3630	4710	3820	2340	2010	4820	2070	3660	3200	1860
23	2960	4330	2780	3690	4230	2340	2020	3520	1450	4360	2380	1840
24	2090	3350	1550	3170	3580	2340	2020	3370	1520	4480	3460	4330
25	3360	3280	2470	5690	2340	2450	2040	3690	2440	4700	3050	3320
26	3370	4060	4070	6900	3340	2710	2030	2280	2340	3910	2580	3520
27	2560	5890	3990	6850	3870	2330	2070	2500	2370	4040	4810	2830
28	2000	5870	5220	6430	3560	2390	3040	2510	2350	4200	5120	2690
29	2070	5420	6570	6600	---	2320	2060	3470	2640	2420	5170	2300
30	3570	4420	6390	5730	---	2340	3570	3100	2310	3090	3240	1480
31	3760	---	7140	5810	---	2300	---	2960	---	2330	2160	---
TOTAL	74620	151800	153390	176380	97210	77970	68190	80130	79200	97990	96090	86010
MEAN	2407	5060	4948	5690	3472	2515	2273	2585	2640	3161	3100	2867
MAX	3760	6990	7140	8250	5670	3820	3570	4820	4240	5700	5170	4330
MIN	1030	2580	1550	1670	2340	2300	2010	1710	1450	1390	1040	1230
AC-FT	148000	301100	304200	349800	192800	154700	135300	158900	157100	194400	190600	170600
†	-347,195	-99,779	-222,086	-296,918	-126,623	+55,576	+42,020	+376,443	+254,933	+68,851	-19,735	-38,578
MEAN‡	3,239	3,384	1,335	860	1,192	3,419	2,981	8,705	6,926	4,280	2,778	2,219
AC-FT‡	199,195	201,321	82,114	52,882	66,177	210,276	177,320	535,343	412,033	263,251	170,865	132,022

CAL YR 1978: TOTAL 1,555,130 MEAN 4,261 MAX 10,900 MIN 1,030 AC-FT 3,085,000

DO.....: MEAN‡ 4,019 AC-FT‡ 2,910,311

WTR YR 1979: TOTAL 1,238,980 MEAN 3,394 MAX 8,250 MIN 1,030 AC-FT 2,458,000

DO.....: MEAN‡ 3,338 AC-FT‡ 2,416,909

† Change in contents, in acre-feet, Ross, Diablo and Gorge Reservoirs.

‡ Adjusted for change in reservoir contents.

12178100 NEWHALEM CREEK NEAR NEWHALEM, WA

LOCATION.--Lat 48°39'22", long 121°14'14", in SE¼SE¼ sec.28, T.37 N., R.12 E., Whatcom County, Hydrologic Unit 17110005, North Cascades National Park, on left bank 1.2 mi (1.9 km) south of Newhalem, 1.5 mi (2.4 km) downstream from East Fork, and at mile 1.5 (2.4 km).

DRAINAGE AREA.--27.9 mi² (72.3 km²).

PERIOD OF RECORD.--January 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,080 ft (329.2 m), by barometer.

REMARKS.--Records fair except those for periods of no gage-height record, Oct. 1 to Dec. 1, Jan. 31-Feb. 4, June 1 to July 2, Aug. 19 to Sept. 19, which are poor. No regulation or diversion above station.

AVERAGE DISCHARGE.--18 years, 173 ft³/s (4.899 m³/s) 84.21 in/yr (2,139 mm/yr), 125,300 acre-ft/yr (154 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,600 ft³/s (159 m³/s) about Nov. 20, 1962, gage height, 7.28 ft (2.219 m) from floodmarks, from rating curve extended above 750 ft³/s (21.2 m³/s) on basis of slope-area measurement of peak flow; minimum, 20 ft³/s (0.57 m³/s) Feb. 1, 1963, gage height, 1.07 ft (0.326 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 750 ft³/s (21.2 m³/s) and maximum (*), from high-water mark:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 7	unknown	*2,920	82.7	*6.08	1.853	Mar. 7	0300	907	25.7	4.36	1.329

Minimum daily discharge, 25 ft³/s (0.708 m³/s) Feb. 3, 4, due to freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	48	48	33	26	51	70	348	279	260	79	63
2	90	50	47	32	26	48	66	336	420	127	76	91
3	78	240	47	31	25	47	65	316	410	133	72	83
4	68	560	48	30	25	78	66	485	390	163	68	71
5	63	170	46	30	30	316	69	392	490	200	66	64
6	60	130	44	29	29	690	75	316	290	212	62	61
7	59	870	42	29	29	685	76	240	190	210	59	60
8	58	400	41	29	29	324	78	190	210	240	60	90
9	70	180	41	28	41	207	80	163	260	231	62	120
10	108	150	40	28	44	167	78	147	330	332	64	81
11	86	120	66	28	44	163	73	133	370	225	64	58
12	74	108	56	28	49	163	70	139	340	197	62	49
13	68	94	49	28	104	145	84	195	260	155	63	47
14	63	81	47	27	80	143	86	234	180	149	63	48
15	59	74	45	27	62	173	78	276	160	167	58	49
16	56	74	43	27	55	173	75	360	170	177	57	43
17	55	78	42	27	50	141	80	273	180	190	63	40
18	54	72	41	28	48	121	78	258	190	185	58	41
19	52	67	39	29	47	109	74	234	190	175	52	42
20	82	62	39	31	44	106	70	234	180	182	53	42
21	60	57	39	38	42	105	69	309	170	149	64	41
22	45	54	44	33	41	106	72	392	180	121	76	37
23	40	51	44	31	39	111	85	436	190	112	72	34
24	96	50	60	30	40	121	101	416	200	108	64	34
25	65	48	51	29	52	118	120	416	250	106	59	35
26	50	46	47	28	66	111	151	485	270	105	58	35
27	56	46	44	28	62	100	237	344	280	100	60	68
28	55	48	40	27	55	92	309	217	270	91	56	38
29	60	46	37	27	---	85	348	159	270	81	54	38
30	55	52	35	27	---	79	336	145	340	77	54	29
31	50	---	34	28	---	74	---	205	---	88	52	---
TOTAL	2075	4126	1386	905	1284	5152	3319	8793	7909	5040	1930	1632
MEAN	66.9	138	44.7	29.2	45.9	166	111	284	264	163	62.3	54.4
MAX	140	870	66	38	104	690	348	485	490	332	79	120
MIN	40	46	34	27	25	47	65	133	160	77	52	29
CFSM	2.40	4.95	1.60	1.05	1.65	5.95	3.98	10.2	9.46	5.84	2.23	1.95
IN.	2.77	5.50	1.85	1.21	1.71	6.87	4.43	11.72	10.54	6.72	2.57	2.18
AC-FT	4120	8180	2750	1800	2550	10220	6580	17440	15690	10000	3830	3240

CAL YR 1978 TOTAL 53306 MEAN 146 MAX 870 MIN 34 CFSM 5.23 IN 71.07 AC-FT 105700
WTR YR 1979 TOTAL 43551 MEAN 119 MAX 870 MIN 25 CFSM 4.27 IN 58.07 AC-FT 86380

NOTE:--No gage-height record Oct. 1-Dec. 1, June 1-July 2, Aug. 19-Sept. 19.

12179000 SKAGIT RIVER ABOVE ALMA CREEK, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°36'27", long 121°21'37", in SW¼NE¼ sec.15, T.36 N., R.11 E., Skagit County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.6 mi (1.0 km) upstream from Alma Creek, 6.8 mi (10.9 km) northeast of Marblemount, and at mile 85.8 (138.1 km).

DRAINAGE AREA.--1,274 mi² (3,300 km²), of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 358.8 ft (109.4 m) National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Water discharge records excellent except those for period of no gage-height record Dec. 24 to Feb. 7, which are good. All diversions returned to river above gage. Flow regulated for powerplants on upper Skagit River by Ross, Diablo, and Gorge Reservoirs (see stations 12175000, 12176500, 12177700).

AVERAGE DISCHARGE.--29 years, 5,527 ft³/s (156.5 m³/s), 4,004,000 acre-ft/yr (4,937 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft³/s (1,090 m³/s) June 21, 1967, gage height, 17.36 ft (5.291 m); minimum, 990 ft³/s (28.0 m³/s) Dec. 29, 1957, gage height, 4.55 ft (1.387 m); minimum daily, 1,180 ft³/s (33.4 m³/s) Oct. 24, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,600 ft³/s (413 m³/s) Nov. 7, gage height, 10.95 ft (3.338 m); minimum, 1,180 ft³/s (33.4 m³/s) Sept. 30, gage height, 5.04 ft (1.536 m); minimum daily, 1,260 ft³/s: (35.7 m³/s) Aug. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2260	3290	4400	6360	5090	2950	2590	4100	5330	3910	3430	2290
2	3130	4010	4590	7200	5790	2870	2580	4010	4160	2730	3200	2260
3	3240	4610	5040	8340	3550	2580	2570	3330	3380	1980	2970	3610
4	3430	6740	6300	8130	2560	2830	2600	4640	4650	2310	2710	4220
5	2870	3440	7110	7350	4510	4450	2610	4080	5600	2440	3030	4260
6	2590	4580	7070	4860	5420	6770	2640	4160	4660	2800	2980	3600
7	1660	7860	7100	1890	5180	6000	2650	3930	3740	2710	2920	4040
8	1200	9360	6130	5630	3170	5430	2660	3070	3560	2960	2320	1850
9	1700	7880	3910	5500	2580	3680	2670	3190	2600	3030	3120	2070
10	2960	7530	3700	7230	2620	3240	2650	2760	3200	4270	2800	3390
11	3050	7380	6260	6870	2910	3100	2630	2480	5070	3380	2170	3510
12	2850	7280	5890	7010	2960	3190	2620	2350	5210	2900	2480	3280
13	2730	7210	7050	6720	4390	3390	2760	2460	4800	2950	3080	3740
14	1860	5880	5580	5490	4460	3060	2760	2870	3840	2670	3600	3580
15	1520	5480	5740	6150	4600	3200	2700	2910	3180	2550	4350	1890
16	2770	5460	4300	7070	3180	3180	2660	3900	2780	5380	4350	1630
17	2630	4660	3860	6410	3410	3010	2610	3430	3040	6290	5180	3820
18	2450	4750	4780	6330	2680	2920	2390	3240	3460	6380	3470	4060
19	2320	4940	5020	4840	3110	2850	2370	2620	3600	5540	1260	3030
20	2910	6120	5300	2060	3320	2830	2340	2810	3520	5710	2360	4170
21	2100	6110	4770	2490	2870	3070	2320	3500	3010	4200	3320	4520
22	2460	6410	3970	4730	3960	2860	2330	6310	2770	4050	3740	2080
23	3190	4720	2690	3820	4490	2870	2400	5310	2010	5020	2940	1930
24	3460	3590	1960	3340	3780	2900	2490	4800	2280	4880	3550	4220
25	3640	3440	2710	5690	2650	2970	2580	5270	3370	5230	4210	3520
26	3600	4130	4320	7020	3690	3250	2690	4120	3430	4340	2910	3580
27	2920	6000	4230	6950	4310	2790	3000	3840	3580	4490	4930	3020
28	2300	6080	5380	6530	3980	2790	4320	3550	3300	4720	5290	3010
29	2380	5490	6740	6700	---	2700	3490	4170	3630	2910	5420	2510
30	3790	4670	6500	5900	---	2680	4920	3910	3340	3550	3600	1600
31	4050	---	7330	5890	---	2620	---	3830	---	2750	2380	---
TOTAL	84160	169100	159810	180580	105140	103110	82600	115630	110160	119030	104070	94290
MEAN	2715	5637	5155	5825	3755	3326	2753	3711	3672	3840	3357	3143
MAX	4050	9360	7330	8340	5790	6770	4920	6310	5600	6380	5420	4520
MIN	1200	3290	1960	1890	2560	2580	2320	2350	2010	1980	1260	1630
AC-FT	166900	335400	317000	358200	208500	204500	163800	229200	218500	236100	206400	187000

CAL YR 1978 TOTAL 1768000 MEAN 4846 MAX 12200 MIN 1200 AC-FT 3508000
WTR YR 1979 TOTAL 1427080 MEAN 3910 MAX 9360 MIN 1260 AC-FT 2831000

12179000 SKAGIT RIVER ABOVE ALMA CREEK NEAR MARBLEMOUNT, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: January 1953 to September 1973, September 1974 to current year.

INSTRUMENTATION.--Temperature recorder for period of daily record.

REMARKS.--Interruptions in the record due to malfunction of the instrument. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 15.0°C Aug. 3-5, 9, 12, 13, 20, 1977; minimum, 1.0°C Jan. 26, 27, 29-31, Feb. 1-3, 1972.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 13.0°C July 15, Aug. 12; minimum, 2.0°C Jan. 31 to Feb. 6, 8.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.5	9.5	10.0	9.5	8.0	9.0	---	---	---	4.0	4.0	4.0
2	10.5	9.0	9.5	9.0	8.0	9.0	---	---	---	4.5	4.0	4.5
3	10.5	9.0	9.5	9.0	8.0	9.0	---	---	---	4.5	3.5	4.0
4	10.5	9.0	9.5	8.0	7.5	8.0	---	---	---	4.0	3.5	4.0
5	10.5	9.0	9.5	8.0	7.0	7.5	---	---	---	4.0	3.5	3.5
6	10.5	9.0	9.5	8.5	7.0	8.0	---	---	---	3.5	3.5	3.5
7	10.5	9.5	9.5	8.5	7.5	8.0	---	---	---	3.5	3.0	3.0
8	11.0	9.5	10.0	8.0	8.0	8.0	---	---	---	3.5	3.0	3.0
9	10.5	9.0	9.5	8.0	8.0	8.0	---	---	---	3.5	3.5	3.5
10	10.0	9.5	9.5	8.0	7.5	7.5	---	---	---	3.5	3.5	3.5
11	9.5	9.0	9.5	8.0	7.5	7.5	---	---	---	4.0	3.5	3.5
12	10.0	9.0	9.5	8.0	8.0	8.0	---	---	---	4.0	3.5	3.5
13	10.0	8.5	9.0	8.0	8.0	8.0	---	---	---	4.0	3.5	4.0
14	10.5	9.0	9.5	8.0	7.0	7.5	6.0	5.0	6.0	4.0	3.5	3.5
15	10.5	9.0	9.5	8.0	6.5	7.5	6.0	5.5	6.0	3.5	3.5	3.5
16	10.0	9.0	9.5	8.0	7.0	7.5	6.0	5.5	6.0	3.5	3.0	3.5
17	10.5	9.5	9.5	8.0	7.0	7.5	6.0	5.5	6.0	3.0	3.0	3.0
18	10.5	9.0	9.5	8.0	6.5	7.0	6.0	5.0	5.5	3.0	3.0	3.0
19	10.5	9.0	9.5	7.0	5.5	6.5	6.0	5.5	6.0	3.0	2.5	3.0
20	10.0	9.5	9.5	7.0	6.5	6.5	6.0	5.5	5.5	3.0	3.0	3.0
21	10.0	9.0	9.0	7.0	6.0	6.5	6.0	5.5	5.5	3.5	3.0	3.0
22	9.5	9.0	9.0	---	---	---	5.5	5.5	5.5	3.0	2.5	3.0
23	9.5	9.0	9.0	---	---	---	5.5	5.5	5.5	3.0	3.0	3.0
24	9.5	9.0	9.0	---	---	---	5.5	5.0	5.0	3.5	2.5	3.0
25	9.5	8.5	9.0	---	---	---	5.5	5.0	5.0	3.0	2.5	3.0
26	9.5	8.0	9.0	---	---	---	5.0	5.0	5.0	3.0	2.5	2.5
27	9.5	8.5	9.0	---	---	---	5.0	4.5	5.0	3.0	2.5	3.0
28	9.5	9.0	9.0	---	---	---	5.0	4.5	4.5	3.0	2.5	3.0
29	9.0	8.5	9.0	---	---	---	4.5	4.0	4.0	2.5	2.5	2.5
30	9.0	8.5	9.0	---	---	---	4.0	4.0	4.0	2.5	2.5	2.5
31	9.0	8.0	8.5	---	---	---	4.0	4.0	4.0	2.5	2.0	2.0
MONTH	11.0	8.0	9.5	9.5	5.5	7.5	6.0	4.0	5.0	4.5	2.0	3.0

12179000 SKAGIT RIVER ABOVE ALMA CREEK NEAR MARBLEMOUNT, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	2.0	2.0	2.0	3.5	2.5	3.0	5.0	4.0	4.5	7.5	6.0	6.5
2	2.0	2.0	2.0	4.0	2.5	3.0	5.0	4.0	4.5	8.0	6.0	6.5
3	2.0	2.0	2.0	3.5	2.5	3.0	4.5	4.0	4.5	7.5	6.0	6.5
4	2.5	2.0	2.0	3.5	3.0	3.0	4.5	4.0	4.0	7.0	6.0	6.5
5	2.5	2.0	2.5	3.5	3.0	3.0	5.5	4.0	4.5	7.5	6.0	6.5
6	2.5	2.0	2.5	4.0	3.0	3.0	5.5	4.5	4.5	7.5	6.0	6.5
7	2.5	2.5	2.5	4.0	3.5	3.5	6.0	4.5	5.0	7.5	6.0	6.5
8	3.0	2.0	2.5	4.0	3.5	3.5	5.0	4.5	4.5	8.0	6.5	7.0
9	3.0	2.5	2.5	4.5	3.5	4.0	5.5	4.5	5.0	8.0	6.5	7.0
10	3.0	2.5	3.0	4.5	3.5	4.0	5.5	4.5	5.0	7.5	6.5	7.0
11	3.0	2.5	3.0	4.0	3.5	3.5	5.5	4.5	5.0	9.0	6.5	7.5
12	3.0	2.5	2.5	5.0	3.5	4.0	5.0	4.5	4.5	8.0	6.5	7.0
13	3.0	2.5	2.5	4.5	3.5	4.0	5.0	4.5	4.5	9.5	7.0	7.5
14	3.5	2.5	3.0	5.0	3.5	4.0	6.0	4.5	5.0	9.5	6.5	7.5
15	3.0	2.5	2.5	4.0	4.0	4.0	5.5	4.5	5.0	9.0	6.5	7.5
16	3.0	2.5	2.5	5.0	4.0	4.0	5.5	4.5	5.0	8.0	7.0	7.5
17	2.5	2.5	2.5	5.0	4.0	4.0	6.0	5.0	5.5	8.5	6.5	7.5
18	3.5	2.5	3.0	5.0	4.0	4.0	6.5	5.0	5.5	8.5	7.0	7.5
19	3.5	3.0	3.0	5.0	3.5	4.0	6.0	5.0	5.5	9.5	6.5	7.5
20	3.5	2.5	3.0	5.0	3.5	4.0	7.0	4.5	5.5	8.5	7.0	7.5
21	3.5	2.5	3.0	5.0	3.5	4.0	7.0	4.5	5.5	9.5	7.0	8.0
22	3.0	2.5	2.5	5.5	3.5	4.0	7.5	5.0	6.0	9.0	7.5	8.0
23	2.5	2.5	2.5	5.5	3.5	4.5	7.5	5.5	6.0	8.5	7.5	8.0
24	2.5	2.5	2.5	5.5	4.0	4.5	7.5	5.5	6.5	9.0	7.0	8.0
25	3.0	2.5	2.5	5.0	4.0	4.5	8.0	5.5	6.5	9.0	7.0	8.0
26	3.5	2.5	3.0	5.0	4.0	4.5	8.0	5.5	6.5	8.5	7.0	8.0
27	3.0	2.5	3.0	5.0	4.0	4.5	8.5	5.5	6.5	8.0	7.0	7.5
28	3.5	2.5	3.0	5.0	4.0	4.5	8.0	5.5	6.5	8.5	7.0	7.5
29	---	---	---	5.0	4.0	4.5	7.0	6.0	6.5	9.0	7.0	8.0
30	---	---	---	4.5	4.0	4.5	7.0	6.0	6.5	10.0	7.5	8.5
31	---	---	---	5.0	4.0	4.5	---	---	---	10.0	8.0	9.0
MONTH	3.5	2.0	2.5	5.5	2.5	4.0	8.5	4.0	5.5	10.0	6.0	7.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.5	7.5	8.5	9.5	8.5	9.0	12.5	10.5	11.0	10.5	10.5	10.5
2	10.5	8.0	9.0	10.0	8.5	9.0	12.5	11.0	11.5	11.0	10.5	10.5
3	10.5	7.5	8.5	12.0	8.5	10.0	12.0	10.5	11.0	10.5	10.0	10.5
4	9.5	8.0	8.5	11.0	9.0	10.0	12.0	10.5	11.0	10.5	10.0	10.0
5	9.0	7.5	8.5	11.5	9.0	10.5	12.0	10.5	11.0	10.5	10.0	10.0
6	9.0	7.5	8.0	11.5	9.5	10.5	12.0	10.0	11.0	11.0	10.0	10.5
7	9.5	7.0	8.5	12.0	9.5	10.5	12.0	10.5	11.0	11.0	10.0	10.5
8	10.0	7.5	8.5	12.0	10.0	10.5	12.5	10.5	11.0	12.5	10.0	11.0
9	11.5	7.5	9.0	12.0	10.0	11.0	12.5	10.5	11.5	11.0	10.0	10.5
10	11.0	8.0	9.0	10.5	9.5	10.0	12.5	10.5	11.5	11.0	10.0	10.5
11	10.5	8.0	9.0	10.5	9.5	10.0	12.5	10.5	11.5	11.0	9.5	10.0
12	10.5	8.0	9.0	11.5	9.5	10.0	13.0	10.5	11.5	11.0	9.5	10.0
13	10.0	8.0	8.5	12.0	9.5	10.5	12.5	10.5	11.5	11.0	9.5	10.0
14	10.0	7.5	8.5	12.5	9.5	10.5	11.5	11.0	11.0	11.0	9.5	10.0
15	10.0	8.0	9.0	13.0	10.0	11.0	11.5	11.0	11.0	11.0	10.0	10.5
16	9.0	8.5	8.5	12.0	10.5	11.0	12.0	10.5	11.0	12.0	10.0	10.5
17	9.5	8.0	8.5	11.5	10.5	11.0	11.0	10.5	11.0	11.0	10.0	10.5
18	9.0	8.0	8.5	11.5	10.5	11.0	11.5	10.5	11.0	10.5	10.0	10.0
19	8.5	8.0	8.5	11.5	10.0	10.5	11.5	10.5	11.0	11.0	10.0	10.0
20	9.0	8.0	8.5	11.5	10.0	10.5	12.5	10.5	11.0	10.5	10.0	10.0
21	10.5	8.0	9.0	11.5	10.5	11.0	12.0	10.5	11.0	10.5	10.0	10.0
22	10.5	8.0	9.0	12.0	10.0	11.0	11.5	11.0	11.0	11.0	10.0	10.5
23	11.5	8.5	9.5	11.0	10.0	10.5	11.5	10.5	11.0	11.5	10.0	10.5
24	12.0	8.5	10.0	11.5	10.0	10.5	12.0	10.5	11.0	11.0	9.5	10.0
25	11.5	8.5	10.0	11.5	10.5	11.0	11.5	10.5	11.0	11.0	10.0	10.5
26	11.5	8.5	10.0	12.0	10.5	11.0	12.5	10.5	11.0	10.5	10.0	10.0
27	11.5	8.5	10.0	12.0	10.5	11.0	11.0	10.5	11.0	10.5	10.0	10.0
28	11.5	9.0	10.0	11.5	10.5	11.0	11.5	10.5	11.0	10.5	10.0	10.0
29	10.0	9.0	9.5	11.5	10.0	11.0	11.5	10.5	11.0	10.0	9.5	10.0
30	9.5	8.5	9.0	12.0	10.0	11.0	10.5	10.5	10.5	11.0	9.5	10.0
31	---	---	---	12.5	10.5	11.0	11.5	10.5	10.5	---	---	---
MONTH	12.0	7.0	9.0	13.0	8.5	10.5	13.0	10.0	11.0	12.5	9.5	10.5
YEAR	13.0	2.0	7.0									

12179800 SKAGIT RIVER ABOVE BACON CREEK NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°36'10", long 121°23'11", in SE¼SW¼ sec.21, T.36 N., R.11 E., Skagit County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, on right bank 0.1 mi (0.2 km) upstream from Bacon Creek, 5.9 mi (9.5 km) northeast of Marblemount, and at mile 83.0 (133.5 km).

DRAINAGE AREA.--1,289 mi² (3,339 km²) of which 400 mi² (1,036 km²) is in Canada.

PERIOD OF RECORD.--April 1977 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 350 ft (107 m), from topographic map.

REMARKS.--Records good. All diversions returned to river above gage. Flow regulated by powerplants on upper Skagit River by Ross (sta 12175000), Diablo (sta 12176500), and Gorge (sta 12177700) Reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,600 ft³/s (498 m³/s) Nov. 1, 1977, gage height, 10.06 ft (3.066 m); minimum daily, 1,260 ft³/s (35.7 m³/s) Aug. 19, 1979, during period of no gage-height record.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,300 ft³/s (462 m³/s) Nov. 7, gage height, 9.60 ft (2.926 m); minimum daily, 1,260 ft³/s (35.7 m³/s) Aug. 19, during period of no gage-height record.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2520	3430	4590	6270	5010	2970	2570	4520	5710	4190	3430	2290
2	3220	4110	4540	7070	5670	2850	2560	4420	4700	2890	3170	2260
3	3370	5050	5010	8190	3480	2560	2540	3680	3920	2040	2960	3690
4	3540	8050	6250	8030	2480	2920	2580	5390	5170	2360	2710	4520
5	2990	3770	7090	7230	4390	5150	2600	4650	6320	2520	3030	4560
6	2700	4860	7050	4900	5120	7930	2630	4630	5130	2920	2980	3400
7	1790	8700	7050	1990	5130	7230	2630	4260	3940	2800	2870	4230
8	1380	10200	6180	5480	3180	6050	2660	3270	3770	3140	2270	1850
9	1770	8230	4050	5240	2560	4080	2660	3350	2780	3230	3070	2280
10	3070	7730	3790	7090	2600	3500	2650	2870	3570	4760	2780	4180
11	3230	7510	6270	6730	2900	3410	2610	2560	5510	3660	2170	3680
12	2950	7370	5890	6870	3040	3410	2610	2410	5710	3070	2480	3280
13	2820	7270	7030	6590	4540	3570	2800	2580	5080	3040	3080	3890
14	1990	5940	5640	5420	4650	3210	2800	3060	4080	2750	3600	3720
15	1640	5480	5710	5980	4680	3410	2730	3210	3290	2620	4340	1890
16	2800	5510	4320	6910	3230	3380	2670	4420	2890	5490	4350	1430
17	2730	4680	3830	6340	3470	3150	2630	3710	3170	6510	5400	3820
18	2540	4740	4720	6200	2710	3030	2380	3510	3590	6590	3560	4190
19	2400	4900	4920	4770	3080	2930	2340	2820	3750	5780	1260	3030
20	3010	6070	5370	2310	3350	2890	2300	3030	3650	5930	2360	4170
21	2230	6110	4760	2630	2860	3130	2280	3740	3070	4340	3440	4720
22	2500	6380	4020	4560	3890	2930	2290	6890	2890	4110	3970	2100
23	3240	4760	2740	3740	4470	2930	2390	5980	2030	5150	3100	1930
24	3640	3570	2230	3290	3750	2990	2500	5310	2380	4950	3550	4220
25	3760	3360	2870	5300	2670	3040	2620	5850	3590	5280	4400	3680
26	3690	4020	4310	6870	3720	3330	2790	4740	3710	4390	3080	3680
27	3040	5930	4230	6810	4390	2830	3260	4290	3860	4560	5120	2940
28	2420	6090	5280	6380	3940	2800	4700	3800	3540	4740	5510	3080
29	2530	5420	6630	6550	---	2710	3940	4320	3890	2960	5660	2520
30	3870	4630	6360	5940	---	2690	5370	4050	3650	3530	3780	1560
31	4160	---	7230	5750	---	2610	---	4070	---	2750	2380	---
TOTAL	87540	173870	159960	177430	104960	109620	84090	125390	118340	123050	105860	96790
MEAN	2824	5796	5160	5724	3749	3536	2803	4045	3945	3969	3415	3226
MAX	4160	10200	7230	8190	5670	7930	5370	6890	6320	6590	5660	4720
MIN	1380	3360	2230	1990	2480	2560	2280	2410	2030	2040	1260	1430
AC-FT	173600	344900	317300	351900	208200	217400	166800	248700	234700	244100	210000	192000

CAL YR 1976 TOTAL 1851860 MEAN 5074 MAX 12200 MIN 1380 AC-FT 3673000
WTR YR 1979 TOTAL 1466900 MEAN 4019 MAX 10200 MIN 1260 AC-FT 2910000

12181000 SKAGIT RIVER AT MARBLEMOUNT, WA

LOCATION.--Lat 48°32'02", long 121°25'43", in NE¼SW¼ sec.7, T.35 N., R.11 E., Skagit County, Hydrologic Unit 17110005, on right bank 0.5 mi (0.8 km) north of Marblemount and 0.6 mi (1.0 km) upstream from Cascade River, and at mile 78.7 (126.6 km).

DRAINAGE AREA.--1,381 mi² (3,577 km²) of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1943 to July 1944, October 1946 to September 1951, May 1976 to current year.

REVISED RECORDS.--WDR WA-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 305.1 ft (92.99 m) National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.-Water-discharge records good. All diversions returned to river above gage. Flow regulated by powerplants on upper Skagit River, by Ross, Diablo, and Gorge Reservoirs (see stations 12175000, 12176500, 12177700).

AVERAGE DISCHARGE.--8 years (water years 1947-51, 1977-79) 5,940 ft^3/s (168.2 m^3/s) 4,304,000 ac-ft/yr (5,310 hm^3/yr), unadjusted for regulation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,300 ft^3/s (1,680 m^3/s) Nov. 27, 1949, gage height, 11.37 ft (3.466 m), from rating curve extended above 20,000 ft^3/s (566 m^3/s); minimum, 620 ft^3/s (17.6 m^3/s) Mar. 6, 1944, gage height, 0.55 ft (0.168 m); minimum daily, 1,190 ft^3/s (33.7 m^3/s) Feb. 25, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,100 ft^3/s (654 m^3/s) Nov. 7, gage height, 7.01 ft (2.137 m); minimum, 1,460 ft^3/s (41.3 m^3/s) Sept. 27, 30, gage height, 1.61 ft (0.491 m); minimum daily, 1,610 ft^3/s (45.6 m^3/s Oct. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3140	3650	4840	6700	5310	3500	3020	5510	6730	4450	3610	2610
2	3440	4270	4950	7550	5940	3400	2990	5420	5860	3270	3510	2870
3	3680	5710	5380	8820	3790	3100	2980	4610	5070	2470	3360	4140
4	3790	10200	6640	8820	2800	3500	3040	6740	6200	2930	3060	4060
5	3260	4380	7590	7720	4590	6200	3090	5790	7580	3140	3250	4860
6	2950	5250	7530	5330	5370	9400	3150	5630	6850	3530	3310	3900
7	2060	10600	7550	2230	5480	8500	3140	5130	4650	3430	3210	4440
8	1610	12800	6670	5660	3580	7100	3170	4080	4500	3800	2640	2590
9	1930	9450	4270	5600	3040	5090	3190	4010	3610	3890	3320	2990
10	3350	8690	3930	7470	3080	4340	3140	3590	4460	5670	3150	4400
11	3660	8330	6820	7100	3370	4240	3090	3230	6380	4430	2510	3060
12	3230	8100	6410	7240	3680	4200	3080	3130	6660	3770	2620	3540
13	3030	7940	7570	6940	5400	4300	3420	3370	5750	3600	3330	4030
14	2300	6560	6220	5720	5390	3950	3410	3060	4890	3330	3760	3060
15	1920	5960	6030	6260	5280	4160	3260	4160	3970	3200	4520	2290
16	2860	6100	4840	7260	3810	4160	3100	5420	3510	5900	4490	1730
17	2970	5280	4250	6680	3990	3830	3170	4580	3830	7060	5410	3080
18	2760	5260	5090	6460	3280	3660	2920	4280	4310	7070	3080	4280
19	2580	5430	5280	5100	3550	3520	2870	3630	4520	6380	1650	3340
20	3240	6540	5780	2610	3830	3580	2820	3830	4380	6470	2430	4270
21	2580	6610	5130	2800	3350	3700	2790	4510	3120	4890	3460	4080
22	2740	6850	4530	4680	4600	3560	2810	7940	3110	4530	4260	2520
23	3370	5290	3290	4040	5300	3550	2960	7140	2340	5630	3360	2150
24	4040	3960	2580	3580	4500	3640	3130	6260	2690	5380	3700	4180
25	4000	3810	3080	5510	3200	3640	3270	6960	3820	5580	4570	3850
26	3890	4380	4690	7210	4400	3880	3520	5920	3980	4810	3270	3680
27	3320	6270	4570	7120	5200	3400	4140	5270	4150	4980	5110	3260
28	2690	6550	5680	6670	4700	3330	5660	4540	3860	5110	5610	3450
29	2880	5770	7050	6870	---	3210	5090	4910	4120	3450	5810	2840
30	4050	5070	6800	6140	---	3160	6310	4620	4000	3040	3990	1890
31	4400	---	7740	5840	---	3080	---	4810	---	3100	2700	---
TOTAL	95720	194980	172780	187770	119810	131800	101810	152800	138100	139090	112860	105440
MEAN	3088	6499	5574	6057	4279	4252	3394	4929	4603	4487	3641	3515
MAX	4400	12800	7740	8820	5940	9400	6310	7940	7580	7070	5810	4860
MIN	1610	3650	2580	2230	2800	3080	2790	3130	2340	2470	1650	1730
AC-FT	189900	386700	342700	372400	237600	261400	201900	303100	273900	275900	223900	209100

CAL YR 1978 TOTAL 2076830 MEAN 5690 MAX 14200 MIN 1610 AC-FT 4119000
WTR YR 1979 TOTAL 1652960 MEAN 4529 MAX 12800 MIN 1610 AC-FT 3279000

12181000 SKAGIT RIVER AT MARBLEMOUNT, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--At Cascade Road bridge in Marblemount, 0.5 mi (0.8 km) downstream from gage.

PERIOD OF RECORD.--Water years 1959-70, 1977 to current year.

REMARKS.--Prior to November 1961 published as "above Alma Creek, near Marblemount."

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM COBALT UNITS)	TURBIDITY (NTU)
OCT , 1978 24...	1055	4230	47	7.5	8.9	10	3.0
NOV 14...	1120	7350	65	7.2	7.9	15	5.0
DEC 19...	1100	5240	65	7.5	5.3	10	4.0
JAN , 1979 10...	1025	7510	72	7.5	3.4	0	2.0
FEB 07...	1030	6720	68	7.2	2.8	10	4.0
MAR 06...	1015	E9400	37	6.8	4.0	50	10
APR 10...	1100	3140	63	7.3	6.3	15	<1.0
MAY 15...	1015	3410	43	7.2	7.7	15	2.0
JUN 26...	1035	3560	38	7.1	9.5	10	2.0
JUL 17...	1055	7750	35	7.3	11.1	15	3.0
AUG 28...	1100	6050	45	7.4	11.3	15	4.0
SEP 25...	1040	3660	43	7.3	10.4	15	3.0

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1978 24...	11.5	.07	.01	.010	.01	.03
NOV 14...	12.0	.10	.01	.010	.00	.00
DEC 19...	12.6	.06	.01	.000	.00	.00
JAN , 1979 10...	13.1	.13	.01	.010	.00	.00
FEB 07...	13.7	.06	.01	.000	.00	.00
MAR 06...	13.5	.15	.02	.020	.01	.03
APR 10...	12.6	.17	.00	.000	.00	.00
MAY 15...	12.1	.09	.00	.000	.00	.00
JUN 26...	11.1	.10	.01	.000	.00	.00
JUL 17...	10.9	.05	.04	.000	.01	.03
AUG 28...	11.5	.06	.00	.000	.00	.00
SEP 25...	11.5	.06	.03	.030	.05	.15

12181100 SOUTH FORK CASCADE RIVER AT SOUTH CASCADE GLACIER, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°22'13", long 121°04'23", Skagit County, Hydrologic Unit 17110005, Mount Baker National Forest, on left bank at outlet of South Cascade Lake, 10.2 mi (16.4 km) upstream from confluence with North Fork, 21 mi (33.8 km) southeast of Marblemount, and at mile 28.9 (46.5 km).

DRAINAGE AREA.--2.36 mi² (6.11 km²).

PERIOD OF RECORD.--July 1957 to September 1961 (seasonal records only; published as "near Marblemount"), October 1961 to current year. Prior to October 1960, monthly discharge only published in WSP 1736; dailies on file in Tacoma district office.

GAGE.--Water-stage recorder. Datum of gage is 5,290.61 ft (1,612.578 m) National Geodetic Vertical Datum of 1929 (from U.S. Coast and Geodetic Survey triangulation point). Prior to Sept. 23, 1960, at datum 0.47 ft (0.143 m) lower. Sept. 23, 1960, to Aug. 10, 1964, at datum 1.34 ft (0.408 m) lower.

REMARKS.--Records good. No regulation or diversion above station. Flow originates at South Cascade Glacier.

AVERAGE DISCHARGE.--18 years (water years 1962-79), 26.1 ft³/s (0.738 m³/s) 150.00 in/yr (3,810 mm/yr) 18,880 acre-ft/yr (23.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 194 ft³/s (5.49 m³/s) Oct. 24, 1959; minimum discharge recorded, 0.6 ft³/s (0.017 m³/s) probably sometime Mar. 21-31, 1964, gage height, 0.16 ft (0.049 m), from recorded range in stage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 126 ft³/s (3.57 m³/s) July 20-21, gage height, 2.64 ft (0.805 m); minimum daily, 0.90 ft³/s (0.025 m³/s) Feb. 2-4, gage height, 0.45 ft (0.137 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	10	5.6	2.2	1.0	1.8	3.2	13	41	72	82	86
2	37	10	4.9	2.1	.90	1.7	3.2	11	58	55	87	109
3	33	20	4.7	2.1	.90	1.6	3.2	15	65	47	87	104
4	29	69	5.1	2.1	.90	1.5	3.2	16	67	48	80	76
5	27	29	5.1	2.1	1.2	2.0	3.2	12	79	52	80	64
6	26	17	4.5	2.0	1.8	6.0	3.2	8.4	64	59	74	71
7	26	86	4.1	2.0	2.8	4.0	3.2	6.6	43	61	69	75
8	27	110	3.8	1.9	2.8	4.0	3.2	5.5	37	69	69	101
9	30	59	3.9	1.9	2.8	3.8	3.2	5.0	41	79	75	93
10	40	41	3.9	1.8	2.4	3.6	3.2	4.6	50	110	83	66
11	38	29	5.2	1.8	2.5	3.5	3.2	4.6	58	95	84	51
12	27	24	5.6	1.8	3.1	3.4	3.2	5.1	62	91	86	49
13	23	21	4.7	1.7	3.2	3.3	3.2	6.1	60	75	92	61
14	26	18	4.7	1.7	2.8	3.3	3.2	9.6	45	68	89	82
15	28	15	4.8	1.7	2.4	3.3	3.2	13	39	76	78	89
16	26	14	4.4	1.8	2.1	3.3	3.2	17	38	89	78	79
17	25	13	3.8	1.8	2.1	3.3	3.2	15	33	104	84	69
18	27	12	3.6	1.7	2.1	3.3	3.2	13	29	112	78	73
19	27	11	3.3	1.7	3.0	3.3	3.2	11	29	113	71	73
20	30	9.2	3.1	1.6	3.0	3.3	3.2	12	31	118	77	77
21	25	8.0	3.1	1.6	2.5	3.3	3.2	15	33	117	90	73
22	18	7.3	4.4	1.5	2.5	3.2	3.2	25	38	105	102	63
23	19	6.9	4.9	1.4	2.5	3.2	3.1	36	46	97	97	56
24	36	6.4	5.3	1.4	2.5	3.2	3.1	37	53	94	85	59
25	22	5.9	4.3	1.4	2.5	3.2	3.0	41	59	98	79	63
26	16	5.6	3.7	1.3	2.5	3.2	2.9	54	66	102	78	63
27	16	5.4	3.4	1.3	2.2	3.2	2.9	50	70	103	75	55
28	15	5.7	3.3	1.3	2.2	3.2	11	34	77	95	75	61
29	15	5.2	2.8	1.3	---	3.2	14	25	82	84	83	44
30	13	5.5	2.7	1.2	---	3.2	15	22	76	78	84	42
31	11	---	2.4	1.1	---	3.2	---	26	---	80	78	---
TOTAL	803	679.1	129.1	52.3	63.20	98.6	125.4	568.5	1569	2646	2529	2127
MEAN	25.9	22.6	4.16	1.69	2.26	3.18	4.18	18.3	52.3	85.4	81.6	70.9
MAX	45	110	5.6	2.2	3.2	6.0	15	54	82	118	102	109
MIN	11	5.2	2.4	1.1	.90	1.5	2.9	4.6	29	47	69	42
CFSM	11.0	9.58	1.76	.72	.96	1.35	1.77	7.75	22.2	36.2	34.6	30.0
IN.	12.65	10.70	2.03	.82	1.00	1.55	1.98	8.96	24.72	41.69	39.85	33.51
AC-FT	1590	1350	256	104	125	196	249	1130	3110	5250	5020	4220

CAL YR 1978 TOTAL 10599.94 MEAN 29.0 MAX 111 MIN .12 CFSM 12.3 IN 167.01 AC-FT 21020
WTR YR 1979 TOTAL 11390.20 MEAN 31.2 MAX 118 MIN .90 CFSM 13.2 IN 179.46 AC-FT 22590

12181200 SALIX CREEK AT SOUTH CASCADE GLACIER, NEAR MARBLEMOUNT, WA

LOCATION.--Lat 48°22'16", long 121°04'35", in SE¼ sec.2, T.33 N., R.13 E.(unsurveyed), Skagit County, Hydrologic Unit 17110005, Mount Baker National Forest, on left bank 900 ft (274 m) west of South Cascade Lake, 0.5 mi (0.8 km) upstream from mouth, and 21 mi (33.8 km) southeast of Marblemount.

DRAINAGE AREA.--0.078 mi^2 (0.202 km^2).

PERIOD OF RECORD.--June to November 1961, May 1962 to January 1964 (fragmentary), May 1964 to November 1965, March 1966 to October 1973, July 1974 to October 1975, May 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 5,200 ft (1,585 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE DISCHARGE.--12 years (water years 1965, 1967-73, 1975, 1977-79), 0.59 ft^3/s (0.0168 m^3/s), 99.37 in/yr (2,524 mm/yr), 428 acre-ft/yr (0.526 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 29 ft^3/s (0.82 m^3/s) Feb. 3, 1963, gage height, 3.43 ft (1.045 m), from rating curve extended above 9 ft^3/s (0.25 m^3/s); minimum, 0.02 ft^3/s (0.001 m^3/s) between Aug. 24, and 29, 1961, Aug. 29, 30, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13.0 ft^3/s (0.37 m^3/s) Nov. 3, gage height, 1.85 ft (0.564 m); minimum, 0.03 ft^3/s (0.001 m^3/s) part or all of each day Sept. 22 to Sept. 26, gage height, 0.17 ft (0.052 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.33	.23	.08	.05	.04	.05	.19	1.3	2.9	1.3	.10	.11
2	.24	.42	.08	.05	.04	.05	.18	2.3	3.0	.76	.09	.48
3	.24	4.1	.08	.05	.05	.05	.16	1.5	2.9	.79	.09	.40
4	.22	2.0	.08	.04	.05	.05	.14	1.0	2.5	.80	.09	.21
5	.20	.60	.08	.04	.05	.05	.14	.73	4.1	.79	.08	.23
6	.18	.76	.08	.04	.05	.05	.14	.58	1.5	.72	.08	.25
7	.17	5.0	.08	.04	.05	.05	.14	.51	1.1	.67	.07	.13
8	.15	2.1	.08	.04	.05	.05	.12	.50	1.7	.78	.07	.60
9	.17	1.3	.08	.04	.05	.05	.12	.53	2.1	.74	.06	.84
10	.33	.77	.07	.04	.05	.05	.11	.81	2.7	1.6	.06	.30
11	.37	.54	.07	.04	.05	.05	.11	1.3	2.8	.89	.06	.15
12	.24	.40	.07	.04	.05	.06	.10	1.5	2.5	1.0	.06	.10
13	.18	.28	.06	.04	.05	.18	.10	1.7	1.5	.65	.05	.07
14	.14	.24	.06	.04	.05	.18	.09	2.1	1.1	.56	.09	.06
15	.12	.22	.06	.04	.05	.20	.09	1.4	1.5	.50	.07	.05
16	.12	.21	.06	.04	.05	.17	.09	1.4	1.1	.45	.06	.05
17	.12	.19	.06	.04	.05	.15	.08	1.4	.92	.42	.09	.05
18	.11	.14	.06	.04	.05	.14	.08	1.5	.95	.38	.08	.04
19	.10	.16	.06	.04	.05	.16	.08	2.2	1.2	.35	.07	.04
20	.24	.12	.06	.04	.05	.21	.09	2.9	1.1	.32	.06	.04
21	.15	.12	.06	.04	.05	.25	.19	2.8	1.5	.28	.08	.04
22	.12	.11	.06	.04	.05	.34	.32	2.6	1.7	.25	.11	.03
23	.33	.11	.06	.04	.05	.37	.40	2.8	1.5	.23	.10	.03
24	.40	.10	.06	.04	.05	.35	.68	3.3	1.5	.21	.08	.03
25	.19	.10	.06	.04	.05	.29	1.2	1.8	1.8	.19	.06	.03
26	.15	.09	.06	.04	.05	.27	1.7	1.0	1.7	.17	.05	.03
27	.19	.09	.06	.04	.05	.28	2.0	.70	1.6	.16	.05	.04
28	.21	.09	.06	.04	.05	.25	1.8	.76	1.5	.14	.05	.10
29	.22	.09	.06	.04	---	.23	1.8	1.6	1.0	.13	.04	.05
30	.22	.08	.05	.04	---	.22	1.3	2.4	1.7	.11	.05	.05
31	.21	---	.05	.04	---	.21	---	3.0	---	.11	.05	---
TOTAL	6.36	20.76	2.05	1.27	1.38	5.06	13.74	49.92	54.67	16.45	2.20	4.63
MEAN	.21	.69	.066	.041	.049	.16	.46	1.61	1.82	.53	.071	.15
MAX	.40	5.0	.08	.05	.05	.37	2.0	3.3	4.1	1.6	.11	.84
MIN	.10	.08	.05	.04	.04	.05	.08	.50	.92	.11	.04	.03
CFSM	2.63	8.63	.83	.51	.61	2.00	5.75	20.1	22.8	6.63	.89	1.88
IN.	2.92	9.53	.94	.58	.63	2.32	6.31	22.93	25.11	7.55	1.01	2.13
AC-FT	13	41	4.1	2.5	2.7	10	27	99	108	33	4.4	9.2

CAL YR 1978 TOTAL 235.35 MEAN .64 MAX 5.0 MIN .04 CFSM 8.00 IN 108.09 AC-FT 467
WTR YR 1979 TOTAL 178.49 MEAN .49 MAX 5.0 MIN .03 CFSM 6.13 IN 81.97 AC-FT 354

12182500 CASCADE RIVER AT MARBLEMOUNT, WA

LOCATION.--Lat 48°31'37", long 121°24'50", in NW¼NW¼ sec.17, T.35 N., R.11 E., Skagit County, Hydrologic Unit 17110005, on left bank at Fish Hatchery Road bridge 0.5 mi (0.8 km) upstream from Jordan Creek, 0.7 mi (1.1 km) east of Marblemount, and at mile 0.9 (1.4 km).

DRAINAGE AREA.--172 mi² (445 km²).

PERIOD OF RECORD.--September 1928 to September 1979 (discontinued). Water temperatures May 1952 to November 1963, September 1964, October 1965 to September 1973.

REVISED RECORDS.--WSP 832: 1936. WSP 1932: Drainage area (at site then in use).

GAGE.--Water-stage recorder. Altitude of gage is 330 ft (101 m) from topographic map. Prior to July 1, 1976, water-stage recorder at site 1.6 mi (4.1 km) upstream at different datum.

REMARKS.--Records good. No regulation or diversion above station. Some diurnal fluctuations caused by snowmelt during summer months.

AVERAGE DISCHARGE.--51 years, 1,031 ft³/s (29.20 m³/s) 81.40 in/yr (2,068 mm/yr) 747,000 acre-ft/yr (921 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,700 ft³/s (530 m³/s) Nov. 20, 1962, from rating curve extended above 5,600 ft³/s (159 m³/s); maximum gage height, 11.47 ft (3.496 m) Nov. 27, 1949 at site and datum then in use; minimum discharge, 118 ft³/s (3.34 m³/s) Nov. 30, 1952; minimum gage height, 1.11 ft (0.338 m) Feb. 8, 1937 at site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached a stage of approximately 22 ft (6.7 m), at site and datum then in use, discharge, 46,000 ft³/s (1,300 m³/s). Records for other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base 3,600 ft³/s (102 m³/s) and maximum(*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0400	5,780	164	15.58	4.749
Nov. 7	2300	*9,300	263	*16.44	5.011

Minimum discharge, 155 ft³/s (4.39 m³/s) Feb. 2, gage height, 11.54 ft (3.517 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	844	385	416	240	167	409	486	1960	1850	1620	878	665
2	732	395	381	240	164	375	470	1780	2570	1210	836	1130
3	651	772	392	235	168	352	463	1680	2800	1010	804	977
4	602	3010	425	230	163	441	503	2260	2580	1120	724	716
5	554	1240	401	227	183	1200	520	2100	2870	1280	700	609
6	536	968	368	223	195	2240	550	1780	2200	1400	651	637
7	524	3550	340	220	221	2870	546	1380	1450	1390	609	595
8	506	3700	333	217	213	1800	552	1190	1320	1540	616	836
9	518	1610	333	215	261	1310	563	1060	1500	1580	658	986
10	672	1170	321	218	293	1110	541	968	2060	2330	732	693
11	780	932	490	213	323	1060	506	887	2440	1630	732	548
12	542	804	443	212	482	1040	486	923	2360	1560	716	500
13	482	700	388	212	814	984	587	1100	2040	1270	764	518
14	476	630	385	204	672	966	610	1310	1370	1170	772	574
15	510	588	367	199	525	1080	557	1490	1150	1310	679	609
16	530	595	345	195	452	1040	528	1900	1170	1420	651	560
17	480	623	328	191	413	920	549	1550	1160	1550	732	518
18	450	554	321	188	403	834	530	1460	1110	1570	665	536
19	440	500	303	190	377	784	514	1360	1210	1520	588	536
20	554	476	294	203	342	765	485	1380	1180	1540	602	567
21	458	446	300	238	321	753	476	1580	1110	1420	716	542
22	390	420	339	210	303	750	493	2230	1230	1190	905	470
23	360	405	362	204	289	770	568	2730	1290	1100	804	440
24	700	390	508	199	299	809	659	2550	1420	1080	672	452
25	440	370	422	193	445	786	752	2510	1710	1100	651	458
26	385	360	376	189	528	725	886	2940	1950	1100	644	458
27	452	360	347	190	500	668	1200	2410	1920	1100	644	415
28	446	375	300	181	448	628	1580	1570	1920	986	616	554
29	482	350	263	178	---	596	1830	1240	1960	852	665	395
30	430	414	250	173	---	557	1860	1100	1620	804	679	375
31	400	---	245	171	---	517	---	1260	---	860	644	---
TOTAL	16326	27092	11086	6398	9964	29139	20850	51638	52520	40612	21749	17869
MEAN	527	903	358	206	356	940	695	1666	1751	1310	702	596
MAX	844	3700	508	240	814	2870	1860	2940	2870	2330	905	1130
MIN	360	350	245	171	163	352	463	887	1110	804	588	375
CFSM	3.06	5.25	2.08	1.20	2.07	5.47	4.04	9.69	10.2	7.62	4.08	3.47
IN.	3.53	5.86	2.40	1.38	2.15	6.30	4.51	11.17	11.36	8.78	4.70	3.86
AC-FT	32380	53740	21990	12690	19760	57800	41360	102400	104200	80550	43140	35440

CAL YR 1978 TOTAL 343684 MEAN 942 MAX 3700 MIN 245 CFSM 5.48 IN 74.33 AC-FT 681700
WTR YR 1979 TOTAL 305243 MEAN 836 MAX 3700 MIN 163 CFSM 4.86 IN 66.02 AC-FT 605400

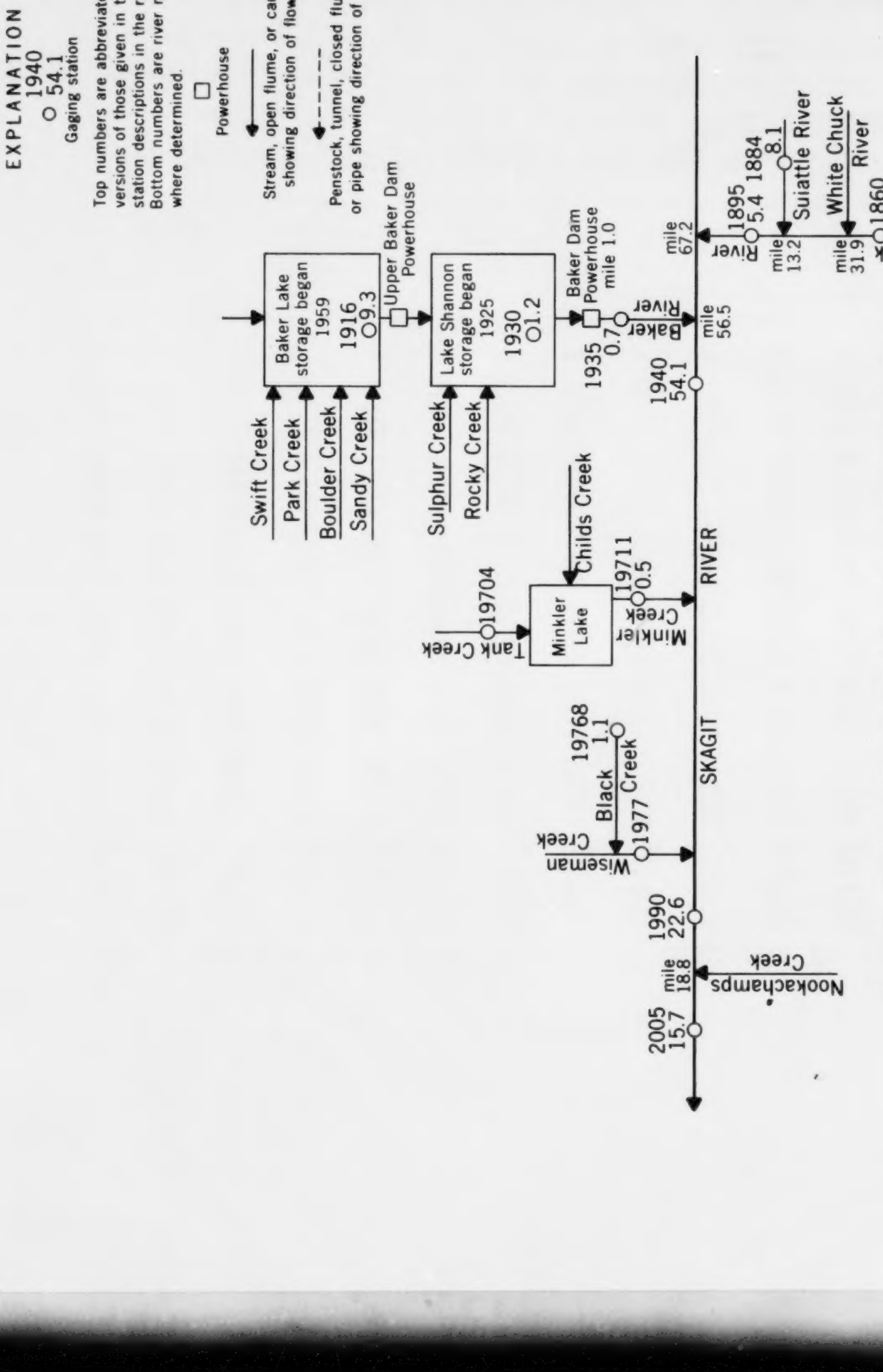

EXPLANATION
1940
○ 54.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
□
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Swift Creek
Park Creek
Boulder Creek
Sandy Creek
Baker Lake storage began 1959
1916
9.3
Upper Baker Dam Powerhouse
Sulphur Creek
Rocky Creek
Lake Shannon storage began 1925
1930
1.2
Baker Dam Powerhouse mile 1.0
1935
0.7
Baker River
mile 56.5
1940
54.1
mile 67.2
River
1895
5.4
1884
8.1
Suiattle River
mile 13.2
White Chuck River
mile 31.9
1860
32.5
Sauk
Childs Creek
19704
Tank Creek
Minkler Lake
19711
0.5
Minkler Creek
RIVER
SKAGIT
19768
1.1
Black Creek
1977
Wiseman Creek
1990
22.6
mile 18.8
Nookachamps Creek
2005
15.7

Figure 17. Gaging stations in Skagit River basin below Cascade River.

12186000 SAUK RIVER ABOVE WHITE CHUCK RIVER NEAR DARRINGTON, WA

LOCATION.--Lat 48°10'08", long 121°28'10", on north line NE¼NE¼ sec.23, T.31 N., R.10 E., Snohomish County, Hydrologic Unit 17110006, Mount Baker National Forest, on right bank 0.6 mi (1.0 km) upstream from White Chuck River, 8.4 mi (13.5 km) southeast of Darrington and at mile 32.5 (52.3 m).

DRAINAGE AREA.--152 mi² (394 km²).

PERIOD OF RECORD.--August to November 1910 (fragmentary gage heights only), October 1917 to September 1922, August 1928 to current year.

REVISED RECORDS.--WSP 752: 1932. WSP 1286: 1918(M), 1920(M), 1921, 1922(M), 1932(M), 1934(M), 1946-47(M), 1949.

GAGE.--Water-stage recorder. Altitude of gage is 930 ft (283 m), from river-profile map. Prior to Nov. 18, 1910, nonrecording gage 0.5 mi (0.8 km) downstream at different datum.

REMARKS.--Records good except those during period of ice effect, Dec. 24-Jan. 19, and Jan. 26-Feb. 4, which are fair. No regulation or diversion above station.

AVERAGE DISCHARGE.--56 years (water years 1918-22, 1929-79), 1,144 ft³/s (32.40 m³/s), 102.21 in/yr (2,596 mm/yr) 828,800 acre-ft/yr (1,020 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,200 ft³/s (855 m³/s) Nov. 27, 1949, gage height, 14.90 ft (4.542 m), from rating curve extended above 15,000 ft³/s (425 m³/s); minimum, 115 ft³/s (3.26 m³/s) Nov. 15, 16, 30, Dec. 1, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0500	*7,480	212	*7.56	2.304	Mar. 7	0600	4,780	135	6.42	1.957

Minimum daily discharge, 148 ft³/s (4.19 m³/s) Feb. 3.

DISCHARGE, IN CUBIC FFET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	755	283	600	250	160	517	523	2150	1880	1850	541	340
2	656	301	511	235	152	458	505	1970	2500	1410	517	663
3	587	1040	505	220	148	425	481	1930	2870	1110	487	770
4	541	4210	593	210	160	911	529	2510	2770	1110	453	554
5	499	1440	523	200	223	2930	541	2660	3100	1160	425	436
6	458	983	469	195	442	4020	574	2440	2620	1260	398	409
7	436	1660	425	190	464	4190	561	1940	1870	1220	381	370
8	420	3070	403	185	493	2470	580	1630	1570	1290	376	414
9	409	1550	414	180	903	1670	698	1470	1640	1300	376	733
10	453	1120	398	175	807	1310	628	1330	1980	2220	409	656
11	475	919	621	180	887	1170	587	1230	2310	1530	409	475
12	414	792	548	190	1290	1150	574	1250	2230	1530	387	403
13	376	698	464	200	1610	1060	687	1300	1970	1280	398	370
14	355	621	523	185	1060	1000	823	1540	1490	1110	425	365
15	345	574	499	170	800	1050	684	1800	1250	1100	381	360
16	330	815	442	160	663	1060	614	2090	1230	1170	365	335
17	325	1060	409	150	614	951	600	1970	1200	1210	403	306
18	320	855	381	160	635	855	574	1930	1120	1200	376	306
19	306	705	355	210	554	792	554	1840	1160	1120	345	301
20	340	607	335	420	499	762	511	1800	1220	1100	365	297
21	345	554	345	469	453	755	499	2030	1200	1020	376	283
22	297	511	481	350	414	740	517	2420	1200	863	493	266
23	283	475	487	310	381	755	580	2890	1220	792	414	250
24	499	447	927	283	409	800	677	2690	1310	747	360	246
25	365	425	649	262	649	815	770	2630	1530	733	345	250
26	315	403	517	240	792	770	911	3100	1730	726	370	250
27	292	398	447	225	719	712	1250	2900	1730	712	370	234
28	283	464	365	210	600	663	1700	2110	1680	656	335	345
29	355	420	325	195	---	628	2010	1640	1700	580	340	254
30	330	580	295	180	---	607	2060	1430	1550	529	340	242
31	301	---	270	170	---	554	---	1460	---	535	330	---
TOTAL	12465	27980	14526	6959	16981	36550	23002	62080	52830	34173	12290	11483
MEAN	402	933	469	224	606	1179	767	2003	1761	1102	396	383
MAX	755	4210	927	469	1610	4190	2060	3100	3100	2220	541	770
MIN	283	283	270	150	148	425	481	1230	1120	529	330	234
CFSM	2.65	6.14	3.09	1.47	3.99	7.76	5.05	13.2	11.6	7.25	2.61	2.52
IN.	3.05	6.85	3.56	1.70	4.16	8.95	5.63	15.19	12.93	8.36	3.01	2.81
AC-FT	24720	55500	28810	13800	33680	72500	45620	123100	104800	67780	24380	22780

CAL YR 1978 TOTAL 328013 MEAN 899 MAX 4210 MIN 270 CFSM 5.91 IN 80.28 AC-FT 650600
WTR YR 1979 TOTAL 311319 MEAN 853 MAX 4210 MIN 148 CFSM 5.61 IN 76.19 AC-FT 617500

SKAGIT RIVER BASIN

12188400 SUIATTLE RIVER ABOVE BIG CREEK NEAR DARRINGTON, WA

LOCATION.--Lat 48°20'32", long 121°27'08", in SW¼SE¼ sec.13, T.33 N., R.10 E., Skagit County, Hydrologic Unit 17110006, on right bank 0.3 mi (0.5 km) upstream from Big Creek, 1.5 mi (2.4 km) downstream from Tenas Creek, 9.5 mi (15.3 km) northeast of Darrington, and at mile 8.1 (13.0 km).

DRAINAGE AREA.--307 mi^2 (795 km^2).

PERIOD OF RECORD.--December 1970 to September 1979 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 640 ft (195 m), from topographic map.

REMARKS.--Records good. Large diurnal fluctuations during summer months caused by snowmelt.

AVERAGE DISCHARGE.--8 years, 1,794 ft^3/s (50.81 m^3/s) 79.36 in/yr (2,016 mm/yr), 1,300,000 acre-ft/yr (1,600 hm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,700 ft^3/s (841 m^3/s) Dec. 4, 1975, gage height, 12.88 ft (3.926 m); minimum daily, 340 ft^3/s (9.63 m^3/s) Feb. 2, 3, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 7,000 ft^3/s (198 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 8	0100	*9,130	259	*8.89	2.710

Minimum daily discharge, 340 ft^3/s (9.63 m^3/s) Feb. 2, 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	611	854	450	345	777	854	2630	2810	2950	1440	1210
2	1220	635	777	430	340	721	833	2440	3670	2280	1400	1860
3	1140	1180	798	420	340	693	812	2400	4280	1870	1320	1670
4	1070	3360	896	410	350	966	888	3000	4100	1970	1220	1180
5	1010	1600	812	390	410	1930	933	2940	4210	2190	1190	1020
6	966	1330	756	380	443	2510	942	2610	3450	2380	1100	1080
7	938	2950	707	370	521	3310	895	2200	2670	2330	1070	1060
8	917	4440	700	360	487	2370	909	1980	2420	2430	1080	1350
9	917	2200	707	350	707	1850	944	1870	2640	2450	1130	1440
10	973	1790	680	360	728	1620	900	1800	3160	3150	1240	1070
11	1030	1510	931	430	763	1550	866	1660	3670	2450	1250	903
12	861	1350	840	500	1110	1530	852	1670	3720	2440	1220	847
13	805	1220	763	460	1540	1460	972	1810	3370	2060	1270	882
14	791	1110	770	443	1240	1420	961	2040	2620	1920	1310	1010
15	784	1050	742	432	1010	1540	901	2320	2300	2030	1200	1110
16	784	1130	700	421	889	1560	875	2720	2290	2190	1150	1040
17	770	1180	674	416	826	1420	894	2470	2240	2370	1250	945
18	763	1070	661	405	833	1320	855	2410	2050	2420	1140	1000
19	735	980	629	405	777	1250	833	2250	2020	2350	1020	1010
20	826	924	617	465	714	1220	791	2310	2020	2370	1070	1090
21	721	889	623	575	680	1190	789	2650	2010	2230	1230	1020
22	648	854	687	465	641	1170	808	3230	2150	1920	1440	882
23	623	819	693	443	617	1190	879	4050	2280	1830	1330	840
24	965	798	1010	432	648	1240	971	3970	2450	1760	1150	854
25	680	770	840	416	882	1230	1070	3930	2780	1700	1150	868
26	629	735	720	400	1010	1170	1240	4560	3010	1680	1230	868
27	629	742	640	390	938	1100	1610	3920	3120	1690	1370	770
28	635	840	580	380	847	1040	2080	2950	3100	1580	1180	1020
29	707	756	530	370	---	1000	2400	2410	3210	1410	1230	700
30	641	861	490	360	---	952	2500	2150	2850	1350	1250	693
31	611	---	470	350	---	896	---	2230	---	1420	1160	---
TOTAL	26140	39684	22297	12878	20636	43195	32057	81580	86670	65170	37790	31292
MEAN	843	1323	719	415	737	1393	1069	2632	2889	2102	1219	1043
MAX	1350	4440	1010	575	1540	3310	2500	4560	4280	3150	1440	1860
MIN	611	611	470	350	340	693	789	1660	2010	1350	1020	693
CFSM	2.75	4.31	2.34	1.35	2.40	4.54	3.48	8.57	9.41	6.85	3.97	3.40
IN.	3.17	4.81	2.70	1.56	2.50	5.23	3.88	9.89	10.50	7.90	4.58	3.79
AC-FT	51850	78710	44230	25540	40930	85680	63590	161800	171900	129300	74960	62070

CAL YR 1978 TOTAL 572789 MEAN 1569 MAX 6280 MIN 470 CFSM 5.11 IN 69.41 AC-FT 1136000
WTR YR 1979 TOTAL 499389 MEAN 1368 MAX 4560 MIN 340 CFSM 4.46 IN 60.51 AC-FT 990500

12189498 SAUK RIVER NEAR ROCKPORT, WA

LOCATION.--Lat 48°24'24", long 121°33'27", in SW¼NE¼ sec.30, T.34 N., R.10 E., Skagit County, Hydrologic Unit 17110006, at highway bridge, 1.5 mi (2.4 km) upstream from gaging station (12189500) and 5.7 mi (9.2 km) south of Rockport.

PERIOD OF RECORD.--Water years 1977 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
24...	1010	2730	64	7.5	8.4	15	8.0
NOV							
14...	1030	2410	67	7.3	2.0	15	3.0
DEC							
19...	1025	1670	49	7.4	3.1	15	2.0
JAN , 1979							
10...	0950	1230	73	7.4	1.3	0	2.0
FEB							
07...	1000	2590	50	7.2	2.2	35	30
MAR							
06...	0940	11700	35	6.9	4.6	65	42
APR							
10...	1025	2640	57	7.5	5.7	15	1.0
MAY							
15...	0945	5720	39	7.3	7.7	15	4.0
JUN							
26...	1005	6380	31	7.4	9.6	20	6.0
JUL							
17...	1015	4800	34	7.5	11.2	30	10
AUG							
28...	1030	1920	50	7.7	12.9	40	19
SEP							
25...	1000	1450	55	7.4	11.3	20	20

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
24...	11.4	.02	.01	.020	.01	.03
NOV						
14...	14.0	.15	.01	.010	.00	.00
DEC						
19...	13.2	.19	.01	.000	.00	.00
JAN , 1979						
10...	13.8	.20	.01	.020	.00	.00
FEB						
07...	13.7	.29	.01	.020	.00	.00
MAR						
06...	13.4	.20	.01	.020	.01	.03
APR						
10...	12.7	.09	.00	.000	.01	.03
MAY						
15...	12.0	.07	.00	.000	.00	.00
JUN						
26...	11.0	.03	.02	.010	.00	.00
JUL						
17...	10.2	.02	.04	.010	.01	.03
AUG						
28...	10.8	.04	.00	.030	.00	.00
SEP						
25...	11.0	.04	.01	.010	.01	.03

12189500 SAUK RIVER NEAR SAUK, WA

LOCATION.--Lat 48°25'29", long 121°34'02", in NW¼NW¼ sec.19, T.34 N., R.10 E., Skagit County, Hydrologic Unit 17110006, on left bank, 4.4 mi (7.1 km) southeast of Rockport, 7.6 mi (12.2 km) southeast of Sauk, 7.8 mi (12.6 km) downstream from Suiattle River, and at mile 5.4 (8.7 km).

DRAINAGE AREA.--714 mi² (1,849 km²).

PERIOD OF RECORD.--August to October 1910 (fragmentary gage heights), March 1911 to August 1912, July 1928 to current year. Published as "near Suiattle Crossing, near Sauk" 1910-12. Water temperatures March 1970 to April 1971.

REVISED RECORDS.--WSP 1286: 1929, 1937, 1939.

GAGE.--Water-stage recorder. Datum of gage is 266 ft (81.1 m) National Geodetic Vertical Datum of 1929 (from river-profile survey). Prior to Aug. 4, 1912, nonrecording gages at several sites 1 mi (1.6 km) downstream to 5 mi (8.0 km) upstream from present site at various datums. July 24, 1928, to Sept. 16, 1929, nonrecording gage at present site and datum.

REMARKS.--Records good except for periods of ice effect, Dec. 28 to Jan. 1 and Jan. 26 to Feb. 4, which are fair. No regulation. Small diversion for millpond at Darrington and for domestic use.

AVERAGE DISCHARGE.--51 years (water years 1929-79), 4,380 ft³/s (124.0 m³/s) 83.31 in/yr (2,116 mm/yr), 3,173,000 acre-ft/yr (3,910 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,400 ft³/s (2,330 m³/s) Nov. 27, 1949, gage height, 16.93 ft (5.160 m); minimum, 572 ft³/s (16.2 m³/s) Dec. 5, 1929, but may have been less during period of ice effect Jan. 10-27, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 4	0600	*22,100	626	*9.38	2.859	Nov. 8	0300	17,400	493	8.54	2.603

Minimum daily discharge, 900 ft³/s (25.5 m³/s) Feb. 2 during period of ice effect.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3070	1500	2500	1500	910	2430	2220	6770	5990	6700	2680	1830
2	2810	1530	2120	1420	900	2160	2150	6240	7950	5060	2600	2930
3	2550	2640	2040	1360	910	2030	2100	6840	9370	4150	2490	3210
4	2410	12800	2530	1300	960	3600	2380	7770	9290	4180	2260	2430
5	2270	4920	2220	1240	1330	9980	2600	8120	9770	4440	2210	1930
6	2150	3460	2010	1200	1560	11400	2600	7510	8620	4870	2070	1890
7	2070	5050	1830	1160	2550	13200	2470	6080	6330	4740	1980	1750
8	1990	11700	1760	1140	1980	8340	2470	5250	5400	4900	1990	2100
9	1980	5720	1760	1110	3780	5900	2850	4840	5610	5000	2010	2830
10	2120	4210	1720	1100	3560	4900	2630	4450	6630	7220	2140	2590
11	2270	3420	3020	1130	3290	4490	2430	4080	7900	5640	2190	1940
12	2010	2950	2700	1150	4950	4470	2360	4160	7920	5490	2100	1720
13	1850	2630	2190	1160	6500	4190	3540	4360	7110	4770	2160	1640
14	1790	2390	2210	1100	4670	3980	3580	5000	5480	4200	2240	1720
15	1760	2240	2160	1080	3370	4240	2960	5670	4640	4190	2090	1810
16	1710	2740	1970	1040	2760	4400	2650	6640	4550	4520	1980	1730
17	1690	3730	1850	1020	2460	3890	2630	6130	4470	4790	2070	1580
18	1670	3040	1790	1010	2720	3540	2480	5910	4160	4890	2040	1600
19	1630	2590	1670	1000	2460	3270	2440	5580	4230	4670	1820	1590
20	1700	2290	1600	1250	2190	3140	2260	5570	4340	4610	1850	1620
21	1790	2150	1620	2260	2030	3080	2200	6160	4280	4450	2000	1630
22	1560	2030	2060	1580	1880	3010	2220	7490	4410	3800	2350	1450
23	1480	1920	2090	1390	1790	3020	2400	9250	4600	3490	2300	1360
24	2140	1830	3850	1300	1850	3160	2640	8850	4890	3330	1950	1350
25	1770	1780	2780	1220	3080	3180	2890	8600	5550	3280	1870	1360
26	1570	1690	2260	1100	3980	3010	3270	10000	6260	3220	1930	1380
27	1520	1670	2040	1040	3370	2820	4260	9500	6320	3260	2220	1260
28	1500	1970	1880	1000	2830	2640	5520	7030	6170	3070	1900	1540
29	1760	1810	1760	960	---	2550	6270	5540	6480	2760	1920	1290
30	1700	2120	1660	930	---	2460	6430	4840	5690	2540	1950	1200
31	1560	---	1580	920	---	2330	---	4870	---	2610	1860	---
TOTAL	59850	100520	65230	37170	74620	134810	89900	198300	184410	134840	65220	54260
MEAN	1931	3351	2104	1199	2665	4349	2997	6397	6147	4350	2104	1809
MAX	3070	12800	3850	2260	6500	13200	6430	10000	9770	7220	2680	3210
MIN	1480	1500	1580	920	900	2030	2100	4080	4160	2540	1820	1200
CFSM	2.70	4.69	2.95	1.68	3.73	6.09	4.20	8.96	8.61	6.09	2.95	2.53
IN.	3.12	5.24	3.40	1.94	3.89	7.02	4.68	10.33	9.61	7.03	3.40	2.83
AC-FT	118700	199400	129400	73730	148000	267400	178300	393300	365800	267500	129400	107600

CAL YR 1978 TOTAL 1358100 MEAN 3721 MAX 12800 MIN 1480 CFSM 5.21 IN 70.76 AC-FT 2694000
WTR YR 1979 TOTAL 1199130 MEAN 3285 MAX 13200 MIN 900 CFSM 4.60 IN 62.48 AC-FT 2378000

RESERVOIRS IN SKAGIT RIVER BASIN, WA

12175000 ROSS RESERVOIR.--(See sta no. 12175000).

12176500 DIABLO RESERVOIR.--Lat 48°42'56", long 121°07'52", in SE¼ sec.5, T.37 N., R.13 E. (unsurveyed), Whatcom County, Hydrologic Unit 17110005, Ross Lake National Recreation Area, in Diablo Dam on Skagit River, 1.2 mi (1.9 km) downstream from Thunder Creek, 6.0 mi (9.7 km) northeast of Newhalem, and at mile 101.0 (162.5 km). DRAINAGE AREA, 1,125 mi^3 (2,914 km^2) includes 400 mi^2 (1,036 km^2) in Canada. PERIOD OF RECORD, October 1929 to current year. October 1929 to September 1938, monthly change in reservoir contents published with records for Skagit River at Newhalem. GAGE, water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (city of Seattle datum). Prior to Oct. 1, 1964, at datum 0.28 ft (0.085 m) higher.

Reservoir is formed by concrete arch dam, completed in 1930, storage began in October 1929. Usable storage 8,820 acre-ft (10.9 hm^3) between elevations 1,195 ft (364.2 m) normal lower limit of operation, and 1,205 ft (367.3 m) top of taintor gates. Dead storage, below elevation 1,040 ft (317.0 m), 12,900 acre-ft (15.9 hm^3). Crest of spillway is at elevation 1,187 ft (361.8 m). Water used by city of Seattle for power development at Diablo and Gorge Powerplants. Capacity table furnished by city of Seattle. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 90,600 acre-ft (112 hm^3) July 14, 1933, elevation, 1,206.5 ft (367.74 m); minimum not determined.

EXTREMES FOR CURRENT YEAR.--Maximum observed contents, 89,726 acre-ft (111 hm^3) date unknown, elevation, 1,205.83 ft (367.537 m); minimum observed, 81,856 acre-ft (101 hm^3) date unknown, elevation, 1,196.91 ft (364.818 m); maximum and minimum elevations from recorded range in stage during period Oct. 19-Dec. 7.

12177700 GORGE RESERVOIR.--Lat 48°41'53", long 121°12'25", in NW¼ sec.14, T.37 N., R.12 E., Whatcom County, Hydrologic Unit, 17110005, Ross Lake National Recreation Area, in Gorge Dam on Skagit River, 2.4 mi (3.9 km) upstream from city of Seattle Gorge powerplant at Newhalem, and at mile 96.6 (155.4 km). DRAINAGE AREA, 1,159 mi^2 (3,002 km^2), includes 400 mi^3 (1,036 km^3) in Canada. PERIOD OF RECORD, June 1960 to current year. GAGE, water-stage recorder; prior to Apr. 1, 1962, reference point on Gorge Dam or dial in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929, Gorge High Dam datum, and 1,792 ft (0.546 m) below National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

Reservoir is formed by concrete arch and gravity dam, completed Dec. 27, 1960; storage began June 27, 1960. Usable storage, 2,115 acre-ft (2.61 hm^3) between elevations 865 ft (263.7 m), normal lower limit of operation and 875 ft (266.7 m), top of gates. Lowest outlet at elevation 760 ft (231.6 m). No dead storage. Crest of spillway is at elevation 825 ft (251.5 m). Water used by city of Seattle for power development at Gorge powerplant. Capacity table furnished by city of Seattle. Figures herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents recorded, 9,758 acre-ft (12.0 hm^3) June 13, 1974, elevation, 880.00 ft (268.224 m); minimum since normal low operating level was reached in December 1960, 1,551 acre-ft (1.91 hm^3) July 20, 1965, elevation, 819.40 ft (249.753 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 8,789 acre-ft (10.8 hm^3) Nov. 7, elevation, 876.24 ft (267.078 m); minimum, 6,560 acre-ft (8.09 hm^3) Sept. 7, elevation, 866.05 ft (363.972 m).

12191600 BAKER LAKE.--Lat 48°38'58", long 121°41'22", in SW¼ sec.31, T.37 N., R.9 E., Whatcom County, Hydrologic Unit 17110005, at upper Baker Dam on Baker River near center of dam, 0.3 mi (0.5 km) upstream from Sulphur Creek, 8.0 mi (12.9 km) north of Concrete, and at mile 9.3 (15.0 km). DRAINAGE AREA, 215 mi^2 (557 km^2). PERIOD OF RECORD, July 1959 to current year. GAGE, water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

Reservoir is formed by concrete gravity dam, completed in June 1959; storage began July 9, 1959. Usable storage, 220,630 acre-ft (272 hm^3) between elevations 655 ft (199.6 m), minimum operating pool and 724 ft (220.7 m) normal full pool. Dead storage below elevation 655 ft (199.6 m), 64,840 acre-ft (79.9 hm^3). Crest of spillway is at elevation 694 ft (211.5 m). Water used by Puget Sound Power and Light Co. for power development. Capacity table furnished by Puget Sound Power and Light Co. Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 287,930 acre-ft (355 hm^3) July 12, 1972, elevation, 724.49 ft (220.825 m); minimum since normal high operating level was reached in August 1960, 102,621 acre-ft (127 hm^3) May 8, 1977, elevation, 674.81 ft (205.682 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 285,472 acre-ft (352 hm^3) Aug. 31, elevation, 724.00 ft (220.675 m); minimum, 107,535 acre-ft (133 hm^3) Feb. 2, elevation, 676.80 ft (206.289 m).

12193000 LAKE SHANNON.--Lat 48°32'53", long 121°44'22", in SW¼ sec.2, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, at Baker Dam on Baker River near left bank, 0.7 mi (1.1 km) north of Concrete and at mile 1.2 (1.9 km). DRAINAGE AREA, 297 mi^3 (769 km^2). PERIOD OF RECORD, November 1925 to current year. GAGE, water-stage recorder; prior to Nov. 11, 1959, water-stage indicator in powerplant. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to March 1959, at datum 1.72 ft ;(0.524 m) lower.

Reservoir is formed by concrete arch and gravity dam, completed in June 1927; storage began in November 1925. Usable storage, 142,400 acre-ft (176 hm^3) between elevations 355 ft (108.20 m), minimum operating pool, and 438.6 ft (133.69 m), normal full pool. Dead storage unknown. Spillway crest is at elevation 424.9 ft (129.51 m). Water used by Puget Sound Power and Light Co. for power development. Prior to Nov. 11, 1959, gage-height record furnished by Puget Sound Power and Light Co. from powerplant log. Figures given herein represent contents above elevation 341.7 ft (104.15 m), center line of outlet tunnel.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 161,470 acre-ft (199 hm^3) Sept. 17, 1968, elevation, 439.50 ft (133.960 m); minimum since October 1953, 28,260 acre-ft (34.8 hm^3) Mar. 6, 1969, elevation, 363.7 ft (110.86 m), not determined prior to October 1953 because of incomplete records.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 159,512 acre-ft (197 hm^3) Aug. 31, elevation, 438.62 ft (133.691 m); minimum observed, 34,744 acre-ft (42.8 hm^3) Feb. 22, elevation, 368.46 ft (112.307 m).

Reservoirs in Skagit River basin--Continued

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
	12176500 Diablo Reservoir			12177700 Gorge Reservoir		
Sept. 30	1,203.02	87,179	---	873.26	8,075	---
Oct. 31	1,202.32	86,556	-623	873.46	8,121	+46
Nov. 30	1,198.44	83,168	-3,388	873.06	8,028	-93
Dec. 31	1,199.12	83,752	+584	873.37	8,100	+72
CAL YR 1978	---	---	-2,990	---	---	-86
Jan. 31	1,202.35	86,582	+2,830	874.31	8,321	+221
Feb. 28	1,200.26	84,743	-1,839	872.92	7,996	-325
Mar. 31	1,204.09	88,139	+3,396	872.79	7,966	-30
Apr. 30	1,202.24	86,485	-1,654	872.90	7,991	+25
May 31	1,202.74	86,929	+444	873.26	8,075	+84
June 30	1,202.04	86,309	-620	873.30	8,084	+9
July 31	1,198.45	83,176	-3,133	870.96	7,556	-528
Aug. 31	1,202.61	86,814	+3,638	873.08	8,033	+477
Sept. 30	1,201.70	86,010	-804	872.70	7,946	-87
WTR YR 1979	---	----	-1,169	---	---	-129
	12191600 Baker Lake			12193000 Lake Shannon		
Sept. 30	721.83	274,766	---	436.44	154,719	---
Oct. 31	720.46	268,120	-6,646	436.41	154,654	-65
Nov. 30	708.30	213,108	-55,012	426.90	134,708	-19,946
Dec. 31	695.28	162,950	-50,158	428.49	137,933	+3,225
CAL YR 1978	---	---	+6,224	---	---	-9,324
Jan. 31	678.24	111,220	-51,730	401.27	86,518	-51,415
Feb. 28	685.35	130,983	+19,763	374.34	43,120	-43,398
Mar. 31	683.47	125,507	-5,476	415.32	112,408	+69,288
Apr. 30	688.30	139,939	+14,432	399.48	83,360	-29,048
May 31	715.64	245,448	+105,509	428.06	137,055	+53,695
June 30	721.62	273,743	+28,295	435.96	153,673	+16,618
July 31	723.96	285,274	+11,531	438.54	159,335	+5,662
Aug. 31	723.98	285,373	+99	438.62	159,512	+177
Sept. 30	723.39	282,445	-2,928	437.40	156,819	-2,693
WTR YR 1979	---	---	+7,679	---	---	+2,100

12193500 BAKER RIVER AT CONCRETE, WA

LOCATION.--Lat 48°32'24", long 121°44'31", in NW¼NW¼ sec.11, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110005, on left bank just upstream from fish barrier, 0.2 mi (0.3 km) northeast of Concrete, 0.3 mi (0.5 km) downstream from Baker River powerplant, and at mile 0.7 (1.1 km).

DRAINAGE AREA.--297 mi² (769 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1910 to March 1915, September 1943 to current year.

REVISED RECORDS.--WSP 1216: 1911-13(M), 1945-46, drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 5, 1915, nonrecording gage at site 0.2 mi (0.3 km) downstream at different datum. Sept. 1, 1943, to Jan. 22, 1958, water-stage recorder at site 700 ft (213 m) upstream at datum 172.6 ft (52.61 m) National Geodetic Vertical Datum of 1929 (from river-profile survey). Jan. 23, to June 11, 1958, powerplant record. Supplementary water-stage recorder on left bank about 40 ft (12 m) downstream from fish barrier and on tailrace of powerhouse at same datum.

REMARKS.--Water-discharge records good except those below 300 ft³/s (8.50 m³/s) which are fair. No diversions which are not returned to river above gage. Flow completely regulated by Baker River powerplants and Baker and Shannon Lakes (see stations 12191600 and 12193000).

AVERAGE DISCHARGE.--40 years (water years 1911-14, 1944-79), 2,660 ft³/s (75.33 m³/s) 1,927,000 acre-ft/yr (2,380 hm³/yr), adjusted for storage in Lake Shannon since November 1925, and Baker Lake since July 1959.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s (1,040 m³/s) Nov. 19, 1962, elevation, 186.6 ft (56.88 m), computation of peak flow over dam; minimum daily, 30 ft³/s (0.85 m³/s) Mar. 21-26, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,190 ft³/s (119 m³/s) Sept. 1, elevation, 174.94 ft (53.322 m); minimum daily, 63 ft³/s (1.78 m³/s) Feb. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2650	1950	1680	2630	3740	441	845	1970	328	3190	2790	3310
2	2860	3360	1290	2210	3710	392	2640	1210	2160	3270	1920	3830
3	3130	3950	1850	2960	3660	64	2590	81	357	3250	1760	3460
4	3010	4060	2320	3080	2300	1700	1800	83	1760	3230	1420	2750
5	1710	4060	3190	3070	2970	1940	2940	83	3440	3190	1640	2340
6	890	3800	2320	2920	2730	466	2960	83	4120	2760	1870	3130
7	694	4060	1780	2910	3260	2250	3010	72	3370	101	1720	1660
8	550	4070	1800	2910	784	2500	3230	65	2890	1220	1620	3310
9	1130	4050	2480	2900	819	2520	3300	65	2230	1920	1350	3940
10	2020	4050	2020	2900	1410	274	3420	66	2110	3360	873	3480
11	1780	4060	2010	2710	1470	859	3650	83	3250	2910	1390	2170
12	1530	4050	2220	2900	1220	1320	3600	1520	3590	3370	1180	2130
13	1350	4050	3040	1110	1390	2650	3460	1930	2560	2950	1730	1210
14	961	3260	2690	1360	3280	2650	3450	739	2720	2040	2030	1530
15	666	2500	2290	3050	2100	1860	2930	981	2700	2010	1510	1270
16	662	3500	2880	2340	3200	2750	2700	753	2170	2240	1590	1350
17	749	3670	1640	2040	2500	2530	2700	1290	1460	2330	1710	1450
18	727	4000	2400	2370	2420	2710	2730	911	3210	2980	1640	960
19	787	3990	2030	78	2390	3150	2860	587	3200	3480	107	716
20	1750	3980	2030	79	2830	2620	2960	159	2570	1810	816	1850
21	1460	3970	971	78	1820	2580	815	1000	1860	2150	2140	1910
22	1470	3510	138	1280	933	2590	73	1710	1900	1320	2850	1680
23	799	2870	140	973	63	1680	74	669	1840	2950	950	107
24	2120	2770	140	2160	66	1080	74	1640	2140	2970	1960	642
25	1890	2800	139	2980	69	2920	928	1780	2870	2080	963	107
26	2260	3190	139	3050	67	1730	490	525	1290	1690	1390	104
27	631	3160	889	2970	66	74	74	824	2840	1570	1590	464
28	1820	1280	2830	3010	64	2690	77	2270	3430	96	1230	3050
29	142	1170	3060	3180	---	2970	285	2290	3380	1360	798	1630
30	141	1500	2980	3610	---	1830	2730	2010	3250	1960	817	514
31	141	---	2970	3770	---	78	---	794	---	104	679	---
TOTAL	42480	100690	58356	73588	51331	55868	63395	28243	74995	69861	46033	56054
MEAN	1370	3356	1882	2374	1833	1802	2113	911	2500	2254	1485	1868
MAX	3130	4070	3190	3770	3740	3150	3650	2290	4120	3480	2850	3940
MIN	141	1170	138	78	63	64	73	65	328	96	107	104
AC-FT	84260	199700	115700	146000	101800	110800	125700	56020	148800	138600	91310	111200
†	-6,711	-74,958	-46,933	-103,145	-23,635	+63,812	-14,616	+159,204	+44,913	+17,193	+276	-5,621
MEAN‡	1,261	2,097	1,118	697	1,408	2,839	1,867	3,500	3,256	2,533	1,489	1,775
CFSM‡	4.25	7.06	3.76	2.35	4.74	9.56	6.29	11.78	10.96	8.53	5.01	5.98
IN‡	4.90	7.88	4.34	2.71	4.93	11.02	7.01	13.59	12.23	9.84	5.78	6.67
AC-FT‡	77,549	124,742	68,767	42,855	78,165	174,612	111,084	215,224	193,713	155,793	91,586	105,579

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CAL YR 1978:  TOTAL  776,028   MEAN  2,126   MAX   9,050   MIN   45   AC-FT  1,539,000
     DO.....:  MEAN‡    2,121   CFSM‡  7.14   IN‡   96.96   AC-FT‡  1,535,900
WTR YR 1979:  TOTAL  720,894   MEAN  1,975   MAX   4,120   MIN   63   AC-FT  1,430,000
     DO.....:  MEAN‡    1,988   CFSM‡  6.69   IN‡  90.90    AC-FT‡  1,439,779
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† Change in contents, in acre-feet, in Baker Lake and Lake Shannon.
‡ Adjusted for change in contents in Baker Lake and Lake Shannon.

12193500 BAKER RIVER AT CONCRETE, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at old highway bridge 0.2 mi (0.3 km) downstream from gaging station.

PERIOD OF RECORD.--Water years 1962-65, 1977 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT , 1978										
24...	1140	142	50	7.0	12.5	10	6.0	10.1	18	5
NOV										
14...	1210	4050	57	7.0	10.0	20	4.0	11.1	20	7
DEC										
19...	1145	3020	54	7.0	6.2	30	6.0	11.3	20	7
JAN , 1979										
10...	1120	2880	56	7.2	4.2	10	5.0	12.6	21	7
FEB										
07...	1120	3570	59	7.0	3.7	15	8.0	12.3	22	5
MAR										
06...	1050	2480	68	6.7	4.4	70	22	12.4	27	8
APR										
10...	1140	3460	64	7.1	5.3	20	7.0	12.3	27	12
MAY										
15...	1105	3320	59	6.9	7.4	15	5.0	11.5	25	8
JUN										
26...	1125	2350	58	7.1	9.7	10	2.0	11.5	20	7
JUL										
17...	1145	2410	49	7.3	11.2	25	2.0	10.5	23	8
AUG										
28...	1135	3060	46	7.1	13.8	15	2.0	10.4	17	8
SEP										
25...	1130	107	58	7.0	10.3	10	3.0	11.6	24	4

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)
OCT , 1978										
24...	5.6	.9	1.2	12	.1	.5	15	0	12	2.4
NOV										
14...	6.2	1.2	1.3	12	.1	.4	16	0	13	2.6
DEC										
19...	6.2	1.1	1.4	13	.1	.7	16	0	13	2.6
JAN , 1979										
10...	6.7	1.1	1.4	12	.1	.4	17	0	14	1.7
FEB										
07...	6.6	1.3	1.8	15	.2	.5	20	0	16	3.2
MAR										
06...	8.3	1.6	2.0	13	.2	.7	24	0	20	7.7
APR										
10...	8.6	1.4	1.7	12	.1	.5	19	0	16	2.4
MAY										
15...	7.7	1.3	1.8	14	.2	.3	20	0	16	4.0
JUN										
26...	6.5	1.0	1.7	18	.2	.5	16	0	13	2.0
JUL										
17...	7.6	.9	1.3	11	.1	.5	18	0	15	1.4
AUG										
28...	5.4	.9	1.3	14	.1	.4	11	0	9	1.4
SEP										
25...	7.6	1.2	2.0	18	.2	.6	--	--	20	--

12193500 BAKER RIVER AT CONCRETE, WA--Continued

WATER QUALITY DATA

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)
OCT , 1978										
24...	5.4	.6	.05	.01	.000	.01	.03	160	0	8
NOV										
14...	11	.7	.11	.00	.020	.00	.00	320	0	0
DEC										
19...	9.3	.8	.10	.01	.000	.00	.00	180	0	10
JAN , 1979										
10...	9.5	.9	.15	.01	.020	.00	.00	--	0	8
FEB										
07...	8.8	1.1	.13	.03	.000	.00	.00	--	0	8
MAR										
06...	9.3	1.0	.20	.05	.040	.00	.00	--	0	0
APR										
10...	10	1.1	.15	.01	.010	.00	.00	390	0	0
MAY										
15...	8.6	1.0	.15	.01	.000	.00	.00	250	1	0
JUN										
26...	7.7	.8	.09	.01	.010	.01	.03	--	1	0
JUL										
17...	10	.8	.08	.01	.010	.00	.00	160	2	0
AUG										
28...	11	.6	.05	.00	.400	.11	.34	150	0	10
SEP										
25...	8.9	.6	.14	.01	.050	.08	.25	230	1	20

DATE	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT , 1978									
24...	<1	0	1	220	0	.0	0	0	4
NOV									
14...	2	0	0	370	10	.0	0	0	0
DEC									
19...	1	10	2	290	4	.0	0	0	<3
JAN , 1979									
10...	<1	0	1	--	8	.0	0	0	<3
FEB									
07...	<1	0	2	--	1	.0	0	0	<3
MAR									
06...	0	0	3	--	0	.1	1	0	0
APR									
10...	0	0	0	710	1	.1	0	0	10
MAY									
15...	0	0	3	390	0	.1	0	0	10
JUN									
26...	0	0	0	--	0	.4	0	0	10
JUL									
17...	0	10	1	100	0	1.5	0	0	10
AUG									
28...	<1	10	1	100	5	.5	0	0	<3
SEP									
25...	2	10	1	240	1	.4	0	0	<3

12194000 SKAGIT RIVER NEAR CONCRETE, WA

LOCATION.--Lat 48°31'28", long 121°46'11", in SE¼NE¼ sec.16, T.35 N., R.8 E., Skagit County, Hydrologic Unit 17110007, on right bank at Dalles Bridge 1.3 mi (2.1 km) southwest of Concrete, 2.4 mi (3.9 km) downstream from Baker River, and at mile 54.1 (87.0 km).

DRAINAGE AREA.--2,737 mi² (7,089 km²), of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.-- September 1924 to current year.

REVISED RECORDS.--WSP 1566: 1957. WSP 1736: 1948. WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 130.0 ft (39.62 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 10, 1924, nonrecording gage 200 ft (61 m) upstream and Dec. 10, 1924, to Sept. 30, 1937, water-stage recorder at present site; both gages at datum 12.7 ft (3.87 m) higher.

REMARKS.--Water-discharge records excellent. Flow regulated for powerplants on Baker and upper Skagit Rivers, by Ross Reservoir (see sta 12175000), and by Diablo and Gorge Reservoirs, Baker Lake, and Lake Shannon (see stations 12176500, 12177700, 12191600, 12193000).

AVERAGE DISCHARGE.--55 years, 15,120 ft³/s (428.2 m³/s), 10,954,000 acre-ft/yr (13,500 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 154,000 ft³/s (4,360 m³/s) Nov. 27, 1949, gage height, 40.8 ft (12.44 m); minimum probably less than 2,160 ft³/s (61.2 m³/s) during period Oct. 1-24, 1925, when recorder was not operating and gates in Baker River Dam were first closed; minimum daily recorded, 2,610 ft³/s (73.9 m³/s) Nov. 14, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached a stage of 69.3 ft (21.12 m), present datum, at site 200 ft (61 m) upstream, from floodmarks, discharge about 500,000 ft³/s (14,160 m³/s). Records of other floods, prior to establishment of station, are given in WSP 1527.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 46,000 ft³/s (1,300 m³/s) Nov. 8, gage height, 25.19 ft (7.678 m); minimum, 4,340 ft³/s (123 m³/s) Sept. 30, gage height, 13.76 ft (4.194 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11300	7690	10200	11500	10800	8220	7120	18300	15300	17800	10400	8660
2	10200	9110	9590	11900	10800	7240	9010	16800	19800	14900	9280	11000
3	10600	12100	10300	12900	9480	6310	8870	14400	19300	12300	8970	12100
4	10100	31000	12100	14500	7070	9230	8500	18100	21400	12300	7880	11300
5	8510	17100	14100	12900	8870	21800	9930	18600	24600	12600	7830	10300
6	6920	14000	13100	10600	9610	25800	10100	17500	23200	13500	8290	10200
7	6020	19700	12100	7830	12700	30200	10100	15100	17700	10300	7890	8930
8	5210	35300	11400	9140	7720	23000	10200	12500	15600	12000	7290	9480
9	5690	22900	9810	10300	8410	17800	10800	11300	14300	13200	7290	11400
10	7700	19400	8510	12100	9540	12600	10700	10700	15600	18900	7230	11500
11	9080	17800	12600	11600	9250	12200	10600	9520	20400	16400	7250	9240
12	7790	16900	13000	11900	11800	12500	10400	10900	22000	15400	6510	8190
13	7030	16200	13800	9960	16800	13600	11900	11900	19100	13500	8180	7710
14	6030	13900	12600	8880	15800	13000	12600	12000	16200	11600	8840	7990
15	5270	12300	11600	10800	13700	12600	11000	13700	13700	11300	9090	6720
16	5460	13300	11400	11200	11600	14000	10100	16300	12500	13800	9000	5870
17	6080	14400	8810	10600	10600	12800	10100	15400	11800	16100	10100	6840
18	5820	13900	10200	10300	10200	12000	9740	14500	13500	17200	9290	7560
19	5590	13300	9730	7110	9930	12000	9660	12900	13900	17000	5210	6820
20	6920	14000	10300	5360	10300	11200	9510	12400	13500	14900	5500	7690
21	7060	13800	8780	5980	8200	11000	7040	14000	11800	14100	8190	9470
22	6240	13500	7920	7310	8030	11200	6190	20200	11900	11600	10900	7260
23	5810	11400	7120	7360	7510	10100	6560	21500	11300	13600	8060	4660
24	8980	10100	8090	7700	7120	9550	7110	21100	12200	13400	8510	5860
25	8550	9450	7300	9450	8180	11600	8570	21500	14800	12300	7910	6380
26	8320	9940	8030	12000	10300	10400	8870	20900	15100	11600	7950	5510
27	6140	11500	8420	11800	10300	7970	10400	20400	16700	11500	9020	5870
28	6760	10900	11200	11400	9280	10200	13900	17900	16900	9710	9810	9030
29	5560	9730	12200	11600	---	10400	15400	15500	17600	9330	9530	6520
30	5890	9740	11900	11800	---	8940	18800	13800	15900	9440	8360	4770
31	6600	---	12600	11200	---	6690	---	12600	---	7180	6270	---
TOTAL	223230	444360	328810	319180	283900	396150	303780	482220	487600	408760	255830	244830
MEAN	7201	14810	10610	10300	10140	12780	10130	15560	16250	13190	8253	8161
MAX	11300	35300	14100	14500	16800	30200	18800	21500	24600	18900	10900	12100
MIN	5210	7690	7120	5360	7070	6310	6190	9520	11300	7180	5210	4660
AC-FT	442800	881400	652200	633100	563100	785800	602500	956500	967200	810800	507400	485600

CAL YR 1978 TOTAL 4748940 MEAN 13010 MAX 35300 MIN 5210 AC-FT 9420000
WTR YR 1979 TOTAL 4178650 MEAN 11450 MAX 35300 MIN 4660 AC-FT 8288000

12194000 SKAGIT RIVER NEAR CONCRETE, WA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples taken 350 ft (107 m) downstream from gaging station.

PERIOD OF RECORD.--Water years 1971, 1974, 1977 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
OCT , 1978 24...	1210	9610	56	7.3	10.1	10	4.0	10.1	21	3	6.6
NOV 14...	1245	12600	65	7.2	6.2	15	4.0	12.5	24	5	7.6
DEC 19...	1220	8660	66	7.3	5.1	15	4.0	12.6	28	7	8.6
JAN , 1979 10...	1200	12100	68	7.4	3.3	0	4.0	13.3	27	3	8.6
FEB 07...	1145	10800	61	7.2	3.1	15	10	13.4	25	6	7.7
MAR 06...	1130	26600	40	6.8	4.6	60	24	13.1	16	0	5.3
APR 10...	1245	10800	63	7.5	5.8	10	3.0	12.8	27	7	8.5
MAY 15...	1140	16300	48	7.1	8.4	15	3.0	11.8	21	3	6.8
JUN 26...	1200	15500	39	7.3	10.5	15	3.0	10.9	16	4	4.9
JUL 17...	1300	14800	39	7.4	12.3	20	5.0	10.7	15	5	4.9
AUG 28...	1200	10000	48	7.4	13.2	25	6.0	11.0	18	6	5.8
SEP 25...	1200	5840	55	7.2	11.8	5	3.0	11.7	23	7	7.1

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT , 1978 24...	1.0	1.1	10	.1	.5	21	0	17	1.7	3.5
NOV 14...	1.2	1.2	10	.1	.5	23	0	19	2.3	7.0
DEC 19...	1.5	1.4	10	.1	.9	25	0	21	2.0	9.5
JAN , 1979 10...	1.3	1.3	9	.1	.4	29	0	24	1.8	5.4
FEB 07...	1.3	1.4	11	.1	.5	23	0	19	2.3	5.9
MAR 06...	.7	1.0	12	.1	.4	20	0	16	5.1	2.3
APR 10...	1.4	1.3	9	.1	.5	24	0	20	1.2	6.7
MAY 15...	1.0	1.3	12	.1	.3	22	0	18	2.8	5.9
JUN 26...	1.0	1.3	14	.1	.5	15	0	12	1.2	4.3
JUL 17...	.7	.9	11	.1	.7	12	0	10	.8	5.2
AUG 28...	.9	1.1	14	.1	.5	15	0	12	1.0	5.4
SEP 25...	1.3	1.1	11	.1	.6	--	--	16	--	5.3

12194000 SKAGIT RIVER NEAR CONCRETE, WA--Continued

WATER QUALITY DATA

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978 24...	.8	.23	.01	.14	.15	.38	1.7	.000	.01	.03
NOV 14...	.7	.11	.00	.19	.19	.30	1.3	.010	.00	.00
DEC 19...	.8	.13	.01	.56	.57	.70	3.1	.000	.00	.00
JAN , 1979 10...	.7	.11	.01	.04	.05	.16	.71	.010	--	--
FEB 07...	.7	.15	.03	.13	.16	.31	1.4	.000	.00	.00
MAR 06...	.7	.20	.03	.18	.21	.41	1.8	.040	.00	.00
APR 10...	.5	.13	.06	.00	.06	.19	.84	.010	.00	.00
MAY 15...	.8	.10	.00	.13	.13	.23	1.0	.000	.00	.00
JUN 26...	.6	.05	.00	.14	.14	.19	.84	.020	.01	.03
JUL 17...	.6	.05	.01	.03	.04	.09	.40	.010	.00	.00
AUG 28...	.4	.05	.00	.26	.26	.31	1.4	.400	.03	.09
SEP 25...	1.0	.07	.05	.09	.14	.21	.93	.000	.04	.12

DATE	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT , 1978 24...	0	9	<1	0	1	0	.0	0	0	<3
NOV 14...	1	0	0	0	0	2	.0	0	0	10
DEC 19...	0	10	5	0	1	6	.0	0	0	10
JAN , 1979 10...	0	9	<1	0	1	2	.0	0	0	<3
FEB 07...	1	9	<1	0	2	3	.0	0	0	<3
MAR 06...	1	0	0	0	1	0	.0	0	0	0
APR 10...	1	0	0	0	0	0	.1	0	0	10
MAY 15...	2	100	0	10	0	0	.0	0	0	10
JUN 26...	1	0	0	10	0	0	.3	0	0	10
JUL 17...	1	0	0	10	0	0	.3	0	0	10
AUG 28...	1	10	<1	10	1	5	.2	0	0	<3
SEP 25...	1	20	<1	20	1	0	.9	0	0	<3

12197040 TANK CREEK NEAR LYMAN, WA

LOCATION.--Lat 48°31'38", long 122°06'19", in NW¼NE¼ sec.13, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on right bank 350 ft (107 m) upstream from State Highway 20 crossing, and 2 mi (3.2 km) west of Lyman.

DRAINAGE AREA.--About 2.5 mi² (6.5 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 100 ft (30 m) from topographic map.

REMARKS.--Water-discharge records fair. No known regulation or diversion above station.

AVERAGE DISCHARGE.--5 years, 2.41 ft³/s (0.068 m³/s), 1,750 acre-ft/yr (2.16 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 113 ft³/s (3.20 m³/s) Dec. 2, 1977, gage height, 4.98 ft (1.518 m); no flow several days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41 ft³/s (1.16 m³/s) Nov. 3, gage height, 3.39 ft (1.033 m); no flow many days during summer.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.68	.78	7.3	1.6	1.5	3.1	2.0	1.4	.44	.59	.00	.00
2	.51	1.0	4.6	1.5	1.4	2.9	2.4	1.3	.38	.26	.00	.00
3	.44	5.5	6.2	1.4	1.3	2.9	3.4	1.3	.38	.18	.00	.11
4	.38	9.8	9.3	1.3	1.6	4.0	8.9	1.3	.38	.18	.00	.06
5	.44	2.5	7.3	1.3	3.4	5.8	7.0	1.8	.78	.16	.00	.06
6	.38	1.5	5.1	1.2	7.3	5.8	4.8	2.9	1.0	.14	.00	.06
7	.38	6.7	4.0	1.2	5.5	6.0	3.8	1.8	.68	.14	.00	.00
8	.38	6.7	3.6	1.1	4.8	4.3	4.0	2.0	.44	.12	.00	.29
9	.44	3.9	4.3	1.4	5.0	4.0	3.8	1.4	.38	.12	.00	.18
10	.59	2.5	3.8	3.4	5.0	3.8	5.8	1.3	.33	.20	.00	.12
11	.68	2.0	4.5	2.4	8.6	3.6	3.8	1.1	.33	.14	.00	.10
12	.51	1.8	3.6	3.4	14	3.6	3.6	1.1	.29	.14	.00	.06
13	.51	1.5	3.1	3.4	13	3.1	3.8	1.1	.51	.11	.00	.00
14	.51	1.4	4.3	2.9	8.4	2.7	3.6	1.0	.33	.00	.00	.00
15	.44	1.4	3.4	2.4	5.9	4.5	4.3	1.0	.29	.00	.00	.00
16	.44	3.2	3.1	2.2	5.0	3.6	3.8	1.0	.51	.00	.00	.00
17	.44	6.1	2.7	2.0	4.7	3.1	4.0	.89	.44	.00	.00	.00
18	.44	5.2	2.7	1.8	9.1	2.7	4.5	.89	.38	.00	.00	.00
19	.38	3.6	2.4	2.7	7.3	2.7	4.5	.78	.44	.00	.00	.00
20	1.4	2.8	2.4	4.0	5.3	2.4	3.4	.68	.33	.00	.00	.00
21	.78	2.4	3.6	3.4	4.4	2.2	2.9	.68	.29	.00	.00	.00
22	.59	2.1	4.8	2.7	4.5	2.2	2.7	.59	.29	.00	.00	.00
23	1.0	2.0	8.4	2.7	4.3	2.0	2.2	.68	.26	.00	.00	.00
24	1.6	1.9	8.4	2.9	4.3	2.0	2.0	.59	.20	.00	.00	.00
25	.68	1.8	5.3	2.2	4.3	1.8	1.8	.51	.20	.00	.00	.00
26	.51	1.6	4.3	2.0	4.0	1.8	1.6	.68	.20	.00	.00	.00
27	.68	2.8	3.8	1.9	4.0	1.8	1.6	.89	.20	.00	.00	.00
28	.78	3.4	2.9	1.8	3.6	1.6	1.4	1.4	.18	.00	.00	.10
29	1.6	2.5	2.3	1.7	---	1.8	1.4	.78	.18	.00	.00	.00
30	1.3	7.3	1.9	1.6	---	1.8	1.4	.59	.59	.00	.00	.00
31	.89	---	1.8	1.6	---	1.8	---	.51	---	.00	.00	---
TOTAL	20.78	97.68	135.2	67.1	151.5	95.4	104.2	33.94	11.63	2.48	.00	1.14
MEAN	.67	3.26	4.36	2.16	5.41	3.08	3.47	1.09	.39	.080	.000	.038
MAX	1.6	9.8	9.3	4.0	14	6.0	8.9	2.9	1.0	.59	.00	.29
MIN	.38	.78	1.8	1.1	1.3	1.6	1.4	.51	.18	.00	.00	.00
AC-FT	41	194	268	133	301	189	207	67	23	4.9	.00	2.3

CAL YR 1978 TOTAL 648.75 MEAN 1.78 MAX 9.8 MIN .00 AC-FT 1290
WTR YR 1979 TOTAL 721.05 MEAN 1.98 MAX 14 MIN .00 AC-FT 1430

12197040 TANK CREEK NEAR LYMAN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: April 1974 to current year.

INSTRUMENTATION.--Temperature recorder since Apr. 24, 1974.

REMARKS.--Interruptions in the record due to malfunction of recorder Nov. 13-Dec. 8, Dec. 29-Jan. 22 and during periods of no flow at gage July 14-Sept. 7, Sept. 11-30. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21.5°C Sept. 2, 1974; minimum, 0.0°C Nov. 21, 1977.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 17.5°C July 9; minimum recorded, 0.5°C Dec. 28, Jan. 31.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.5	11.5	12.5	9.0	7.5	8.0	---	---	---	---	---	---
2	13.0	10.0	11.0	8.0	6.5	7.5	---	---	---	---	---	---
3	12.5	10.0	11.0	8.5	8.0	8.5	---	---	---	---	---	---
4	12.0	9.0	10.5	9.0	7.0	8.0	---	---	---	---	---	---
5	12.0	10.5	10.0	7.5	6.5	7.0	---	---	---	---	---	---
6	13.0	9.5	11.0	8.5	7.0	7.5	---	---	---	---	---	---
7	13.0	11.5	12.5	10.0	8.5	9.0	---	---	---	---	---	---
8	14.0	12.0	13.0	9.5	7.0	8.5	---	---	---	---	---	---
9	12.0	11.0	11.5	7.0	5.5	6.5	5.0	3.5	4.5	---	---	---
10	11.5	11.0	11.5	5.5	4.0	5.0	5.5	4.0	4.5	---	---	---
11	12.5	10.5	11.5	4.0	2.5	3.5	5.5	5.0	5.0	---	---	---
12	11.0	8.5	9.5	3.5	2.0	3.0	5.0	4.0	4.5	---	---	---
13	10.5	7.5	9.0	---	---	---	4.5	4.0	4.0	---	---	---
14	11.0	7.5	9.0	---	---	---	5.0	4.5	5.0	---	---	---
15	12.0	9.0	10.0	---	---	---	4.5	4.0	4.0	---	---	---
16	12.0	10.5	11.0	---	---	---	4.5	4.0	4.5	---	---	---
17	13.5	11.5	12.0	---	---	---	5.0	4.0	4.5	---	---	---
18	12.5	10.0	11.0	---	---	---	5.0	4.5	4.5	---	---	---
19	12.5	10.0	11.0	---	---	---	4.0	4.0	4.0	---	---	---
20	12.0	9.5	11.0	---	---	---	4.5	4.0	4.5	---	---	---
21	9.5	7.5	8.5	---	---	---	4.5	4.5	4.5	---	---	---
22	9.5	8.0	9.0	---	---	---	5.0	4.5	5.0	---	---	---
23	11.5	9.5	10.5	---	---	---	5.0	4.5	4.5	4.0	3.0	3.5
24	10.5	8.0	10.0	---	---	---	5.5	4.0	5.5	3.5	3.0	3.5
25	8.5	6.5	7.5	---	---	---	4.5	3.0	3.5	3.0	2.0	2.5
26	8.0	5.5	6.5	---	---	---	4.0	3.0	3.5	2.5	2.0	2.5
27	9.0	8.0	8.5	---	---	---	3.5	2.0	3.0	3.0	2.5	2.5
28	9.5	8.0	9.0	---	---	---	2.0	.5	2.0	2.5	1.5	2.0
29	8.5	7.0	8.0	---	---	---	---	---	---	2.0	1.5	1.5
30	8.5	7.0	7.5	---	---	---	---	---	---	2.0	1.0	1.5
31	8.0	6.0	7.0	---	---	---	---	---	---	1.5	.5	1.0
MONTH	14.0	5.5	10.0	10.0	2.0	7.0	5.5	.5	4.5	4.0	.5	2.5

12197040 TANK CREEK NEAR LYMAN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.5	---	---	5.0	3.5	4.0	7.5	5.5	6.0	11.0	9.5	10.0
2	1.0	1.0	1.0	5.5	3.5	4.5	7.5	5.5	6.5	10.5	9.0	10.0
3	2.0	1.0	1.5	5.5	4.0	5.0	6.5	5.5	6.0	11.5	9.0	10.0
4	2.5	2.0	2.5	7.0	5.0	6.5	6.5	6.0	6.5	11.5	9.5	10.5
5	3.5	2.5	3.0	7.5	7.0	7.0	10.0	6.5	8.0	11.0	9.0	10.0
6	3.0	2.0	2.5	8.5	7.0	7.5	8.5	6.5	7.5	10.0	8.5	9.0
7	3.5	2.5	3.0	7.5	6.0	7.0	9.5	6.5	7.5	10.0	8.5	9.0
8	4.5	3.0	3.5	7.0	5.0	6.0	7.5	6.5	7.0	11.0	8.5	9.5
9	4.5	4.0	4.5	7.5	4.0	5.5	8.5	6.0	7.0	11.0	8.5	9.5
10	4.5	4.0	4.0	8.0	5.5	6.5	8.5	6.5	7.5	10.0	7.5	8.5
11	5.0	4.0	4.5	7.5	5.0	6.5	9.5	5.5	7.5	11.0	7.5	9.0
12	4.5	4.0	4.5	8.0	5.0	6.5	6.5	6.0	6.5	9.5	8.0	9.0
13	5.0	4.0	5.0	8.5	4.5	6.5	7.5	6.5	7.0	12.5	9.0	10.5
14	4.5	3.5	4.0	9.0	6.0	7.5	8.5	5.5	7.0	12.0	7.5	10.0
15	4.0	3.0	3.5	8.0	6.5	7.5	8.0	6.0	7.0	12.0	8.5	10.5
16	4.0	3.5	4.0	8.5	5.5	7.0	8.0	6.0	7.0	12.5	9.5	10.5
17	4.5	3.5	4.0	8.0	4.5	6.0	8.5	6.5	7.5	10.5	7.5	9.5
18	5.0	4.5	4.5	8.5	5.5	6.5	8.5	6.5	7.0	12.0	8.5	10.0
19	5.0	4.5	4.5	8.5	4.0	6.5	9.0	6.0	7.0	12.0	7.0	9.5
20	5.0	4.0	4.5	8.5	4.0	6.5	10.5	5.5	7.5	11.5	8.0	10.0
21	5.5	3.5	4.5	9.0	4.0	6.5	10.0	5.5	8.0	12.5	8.0	10.5
22	5.0	3.5	4.0	9.5	4.5	7.0	12.0	7.0	9.0	13.0	8.5	11.0
23	4.5	4.0	4.0	9.5	5.5	7.5	11.5	6.5	9.0	12.5	11.0	12.0
24	5.0	3.5	4.0	9.0	5.0	7.0	11.0	6.0	8.5	14.0	11.0	12.0
25	5.5	5.0	5.5	8.0	6.0	7.0	11.0	7.0	9.0	14.5	9.5	12.0
26	6.0	5.5	6.0	8.5	6.0	7.0	12.5	7.0	9.5	12.0	9.5	11.0
27	6.0	5.0	5.5	8.0	5.0	6.5	13.0	8.0	10.5	9.5	8.5	9.0
28	5.5	3.5	4.5	8.0	5.0	6.5	12.0	8.5	10.5	9.5	8.0	9.0
29	---	---	---	7.5	6.0	6.5	11.5	10.0	10.5	11.0	8.5	9.5
30	---	---	---	7.5	6.0	6.5	12.0	8.5	10.5	12.0	7.5	10.0
31	---	---	---	7.0	5.5	6.5	---	---	---	13.0	8.0	10.5
MONTH	6.0	1.0	4.0	9.5	3.5	6.5	13.0	5.5	8.0	14.5	7.0	10.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	14.0	9.0	12.0	11.0	10.0	10.5				---	---	---
2	15.5	10.5	13.0	12.0	10.0	11.0				---	---	---
3	14.5	10.5	13.0	14.0	9.5	11.5				---	---	---
4	13.0	11.5	12.5	13.5	11.5	12.5				---	---	---
5	12.0	10.0	11.5	15.0	11.5	13.0				---	---	---
6	10.5	9.0	10.0	15.0	11.0	13.0				---	---	---
7	12.0	8.0	10.0	14.5	12.0	13.5				16.5	14.0	15.0
8	13.0	8.5	11.0	17.0	13.5	15.0				15.0	13.5	14.0
9	13.5	9.0	11.5	17.5	14.5	16.0				14.5	12.5	13.5
10	14.0	9.5	12.0	15.0	13.5	14.0				---	---	---
11	13.5	9.5	11.5	14.5	13.0	13.5				---	---	---
12	13.0	9.5	11.0	15.0	12.0	13.5				---	---	---
13	12.5	9.5	10.5	14.5	11.0	13.0				---	---	---
14	13.0	8.0	10.5	---	---	---				---	---	---
15	11.5	8.5	10.0	---	---	---				---	---	---
16	11.0	10.0	10.5	---	---	---				---	---	---
17	11.0	9.0	10.0	---	---	---				---	---	---
18	10.5	10.5	10.5	---	---	---				---	---	---
19	11.0	10.0	10.5	---	---	---				---	---	---
20	12.0	10.0	11.0	---	---	---				---	---	---
21	13.0	8.0	10.5	---	---	---				---	---	---
22	12.5	9.5	11.0	---	---	---				---	---	---
23	14.5	10.0	12.0	---	---	---				---	---	---
24	15.0	10.0	12.5	---	---	---				---	---	---
25	16.0	10.5	13.0	---	---	---				---	---	---
26	15.5	10.5	13.0	---	---	---				---	---	---
27	15.0	10.5	13.0	---	---	---				---	---	---
28	15.5	10.5	12.5	---	---	---				---	---	---
29	13.0	11.0	11.5	---	---	---				---	---	---
30	12.0	11.0	11.5	---	---	---				---	---	---
31	---	---	---	---	---	---				---	---	---
MONTH	16.0	8.0	11.5	17.5	9.5	13.0				16.5	12.5	14.0
YEAR	17.5	.5	8.0									

12197110 MINKLER CREEK NEAR LYMAN, WA

LOCATION.--Lat 48°31'15", long 122°06'00", in N½SE¼ sec.13, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on left bank 1.8 mi (2.9 km) west of Lyman and 0.5 mi (0.8 km) upstream from mouth.

DRAINAGE AREA.--About 5 mi² (13.0 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1974 to current year.

REVISED RECORDS.--WDR WA-77-1: 1975.

GAGE.--Water-stage recorder. Altitude of gage is 80 ft (24 m) from topographic map.

REMARKS.--Water-discharge records fair except those for periods of backwater from Skagit River, Nov. 4, 8, Mar. 7, which are poor. No known diversion above station. Flow affected by natural storage in Minkler Lake.

AVERAGE DISCHARGE.--5 years, 5.96 ft³/s (0.17 m³/s), 4,320 acre-ft/yr (5.33 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 150 ft³/s (4.25 m³/s) Dec. 2, 1975; maximum gage height, 10.94 ft (3.335 m) Dec. 4, 1975, backwater from Skagit River; no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 41 ft³/s (1.16 m³/s) Mar. 7; maximum gage height, 3.96 ft (1.207 m) Nov. 8, backwater from Skagit River; no flow many days during summer.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	.96	15	3.6	2.9	9.7	4.2	5.2	.35	.15	.00	.00
2	.70	.86	12	3.3	2.8	9.7	4.8	4.8	.22	.15	.00	.00
3	.56	1.4	12	3.2	2.8	9.4	5.5	4.4	.22	.15	.00	.00
4	.45	9.4	20	3.0	2.8	8.8	14	4.4	.18	.12	.00	.00
5	.40	9.1	22	2.8	3.7	16	21	4.8	.26	.04	.00	.00
6	.40	6.4	18	3.3	6.9	28	18	8.3	.35	.02	.00	.00
7	.30	7.2	12	3.1	11	41	13	6.0	.50	.01	.00	.00
8	.26	25	8.3	3.0	9.7	22	11	5.7	.40	.00	.00	.00
9	.30	15	8.6	2.8	10	14	11	4.4	.22	.00	.00	.00
10	.26	9.4	7.7	4.0	11	11	13	3.7	.15	.00	.00	.00
11	.15	7.7	8.8	4.6	14	11	12	2.8	.12	.00	.00	.00
12	.22	6.2	8.8	4.6	24	12	9.4	2.4	.15	.00	.00	.00
13	.18	4.8	7.7	6.4	29	12	9.7	2.3	.18	.00	.00	.00
14	.15	4.4	8.3	6.7	28	9.7	11	2.0	.15	.00	.00	.00
15	.18	4.0	8.3	5.2	19	12	10	1.6	.15	.00	.00	.00
16	.18	5.5	8.0	4.8	16	12	10	1.5	.18	.00	.00	.00
17	.15	12	7.7	4.4	14	9.7	11	1.3	.15	.00	.00	.00
18	.12	13	6.2	3.9	17	8.6	11	1.1	.15	.00	.00	.00
19	.15	9.4	5.7	4.2	20	7.2	12	.96	.15	.00	.00	.00
20	.26	8.9	5.5	5.2	17	7.2	11	.77	.15	.00	.00	.00
21	.30	8.6	6.0	7.7	14	7.4	8.6	.63	.15	.00	.00	.00
22	.30	8.3	8.0	6.9	12	7.2	8.3	.56	.15	.00	.00	.00
23	.40	7.7	11	5.5	11	6.7	8.3	.50	.15	.00	.00	.00
24	.56	5.0	23	6.4	10	7.2	8.6	.45	.15	.00	.00	.00
25	.63	4.2	18	6.2	9.7	6.7	8.3	.35	.12	.00	.00	.00
26	.63	3.9	14	5.0	11	5.7	8.3	.30	.12	.00	.00	.00
27	.63	4.2	11	6.7	11	5.0	8.3	.40	.12	.00	.00	.00
28	.70	6.4	9.1	6.4	10	4.8	8.0	.63	.12	.00	.00	.00
29	.86	7.2	6.2	4.0	---	4.8	7.4	.96	.12	.00	.00	.00
30	.86	10	5.0	3.4	---	4.8	6.2	.70	.12	.00	.00	.00
31	.86	---	4.4	3.1	---	4.6	---	.50	---	.00	.00	---
TOTAL	13.10	226.12	326.3	143.4	350.3	335.9	302.9	74.41	5.70	.64	.00	.00
MEAN	.42	7.54	10.5	4.63	12.5	10.8	10.1	2.40	.19	.021	.000	.000
MAX	1.0	25	23	7.7	29	41	21	8.3	.50	.15	.00	.00
MIN	.12	.86	4.4	2.8	2.8	4.6	4.2	.30	.12	.00	.00	.00
AC-FT	26	449	647	284	695	666	601	148	11	1.3	.00	.00

CAL YR 1978 TOTAL 1243.33 MEAN 3.41 MAX 25 MIN .00 AC-FT 2470
WTR YR 1979 TOTAL 1778.77 MEAN 4.87 MAX 41 MIN .00 AC-FT 3530

12197110 MINKLER CREEK NEAR LYMAN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.-- "
WATER TEMPERATURES: May 1974 to current year.

INSTRUMENTATION.--Temperature recorder since May 17, 1974.

REMARKS.--Records during period of no flow Aug. 29-Sept. 30 were not published; other interruptions due to malfunctions of the instrument. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21.0°C Aug. 26, 1979; minimum, 1.0°C Nov. 30, 1975.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 21.0°C Aug. 26; minimum recorded, 1.5°C Feb. 6-7.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.0	12.5	12.5				---	---	---	3.5	3.0	3.0
2	13.0	12.0	12.5				---	---	---	3.0	2.5	3.0
3	12.5	12.0	12.5				---	---	---	3.0	2.5	3.0
4	12.0	11.5	12.0				---	---	---	3.0	2.5	2.5
5	---	---	---				---	---	---	3.0	2.5	2.5
6	---	---	---				---	---	---	3.0	2.5	2.5
7	---	---	---				---	---	---	3.0	2.5	2.5
8	---	---	---				---	---	---	3.0	2.5	2.5
9	---	---	---				---	---	---	3.0	3.0	3.0
10	---	---	---				---	---	---	3.0	2.0	2.5
11	---	---	---				---	---	---	2.5	2.0	2.5
12	---	---	---				---	---	---	2.5	2.0	2.5
13	---	---	---				---	---	---	2.0	2.0	2.0
14	---	---	---				---	---	---	2.5	2.0	2.0
15	---	---	---				3.5	3.0	3.0	2.5	2.0	2.5
16	---	---	---				3.5	3.0	3.5	2.5	2.5	2.5
17	---	---	---				3.5	3.0	3.5	3.0	2.5	2.5
18	---	---	---				3.5	3.5	3.5	3.0	2.5	2.5
19	---	---	---				4.0	3.5	3.5	3.0	3.0	3.0
20	---	---	---				3.5	3.5	3.5	3.0	2.5	3.0
21	---	---	---				4.0	3.5	4.0	2.5	2.5	2.5
22	---	---	---				4.5	4.0	4.0	3.0	2.5	2.5
23	---	---	---				4.5	4.5	4.5	3.0	2.5	3.0
24	---	---	---				5.0	4.5	5.0	3.0	2.5	3.0
25	---	---	---				4.5	4.0	4.0	3.5	2.5	3.0
26	---	---	---				3.5	3.5	3.5	3.0	2.5	3.0
27	---	---	---				3.5	2.5	3.0	3.5	2.5	3.0
28	---	---	---				3.0	2.5	2.5	3.0	2.5	2.5
29	---	---	---				3.0	2.5	2.5	3.0	2.5	2.5
30	---	---	---				3.0	2.5	2.5	3.0	2.5	2.5
31	---	---	---				3.0	2.5	2.5	3.5	2.5	3.0
MONTH	13.0	11.5	12.5				5.0	2.5	3.5	3.5	2.0	2.5

12197110 MINKLER CREEK NEAR LYMAN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.5	2.5	3.0	5.0	4.5	5.0	9.0	8.0	8.5	15.0	14.5	15.0
2	3.0	2.5	3.0	5.5	4.0	4.5	9.0	8.0	8.5	14.5	14.0	14.0
3	3.0	3.0	3.0	5.0	4.5	4.5	8.5	8.0	8.0	14.0	13.5	14.0
4	3.0	3.0	3.0	6.0	5.0	5.5	8.0	6.5	7.0	14.0	13.5	14.0
5	3.0	3.0	3.0	7.0	6.0	6.5	9.0	6.5	7.5	14.0	13.5	13.5
6	3.0	1.5	2.5	8.0	7.0	7.5	9.5	8.5	9.0	13.0	12.5	13.0
7	2.0	1.5	2.0	8.5	7.5	8.0	10.0	8.0	9.0	13.0	12.0	12.5
8	2.5	2.0	2.5	8.0	7.0	7.5	9.5	8.5	9.0	13.5	12.0	12.5
9	3.0	2.5	2.5	8.0	6.5	7.0	9.0	8.0	8.5	14.0	12.5	13.0
10	3.5	3.0	3.0	8.5	6.5	7.5	9.5	8.0	9.0	14.0	13.0	13.5
11	3.5	3.0	3.5	8.0	7.0	7.5	11.0	8.5	9.5	14.0	13.0	13.5
12	3.5	3.0	3.0	9.0	7.5	8.0	9.5	8.0	9.0	14.0	13.5	13.5
13	4.0	3.5	3.5	9.0	7.5	8.0	8.5	8.0	8.0	15.0	13.5	14.0
14	4.0	3.5	3.5	9.0	7.5	8.5	8.5	7.0	8.0	15.0	13.5	14.5
15	3.5	3.0	3.5	9.0	8.0	8.5	8.5	8.0	8.0	15.5	14.0	15.0
16	3.0	2.5	3.0	9.0	7.5	8.0	9.0	8.0	8.5	16.5	15.0	15.5
17	3.5	3.0	3.0	8.0	7.0	7.5	9.5	8.0	8.5	15.5	14.5	15.5
18	4.5	3.5	4.0	8.5	7.0	7.5	9.5	8.5	9.0	15.5	14.5	15.0
19	4.5	4.0	4.5	9.0	7.0	8.0	10.5	8.5	9.0	15.5	13.0	14.0
20	4.5	4.0	4.0	9.5	7.5	8.5	11.0	8.5	10.0	15.0	13.5	14.0
21	5.0	4.0	4.5	10.0	8.0	9.0	12.0	9.5	10.5	15.5	13.5	14.5
22	4.5	4.0	4.5	10.5	8.0	9.5	13.0	10.5	12.0	14.5	13.0	13.5
23	4.5	4.0	4.0	11.0	8.5	10.0	14.0	11.5	12.5	13.5	12.0	13.0
24	4.0	3.5	4.0	11.5	9.0	10.0	14.0	12.0	13.0	12.0	10.0	11.0
25	4.5	4.0	4.5	10.0	9.5	10.0	14.0	12.0	13.0	10.5	9.0	10.0
26	5.5	4.5	5.0	10.5	9.0	9.5	15.0	12.5	13.5	9.0	8.5	9.0
27	6.0	5.0	5.5	9.5	8.5	9.0	15.5	13.0	14.5	10.0	9.0	9.0
28	5.5	5.0	5.5	9.5	8.5	9.0	15.5	14.0	14.5	13.0	9.5	11.5
29	---	---	---	9.0	8.5	9.0	16.0	14.5	15.5	14.5	13.0	13.5
30	---	---	---	9.0	8.5	8.5	16.0	14.0	15.0	14.5	12.5	13.5
31	---	---	---	9.0	8.0	8.5	---	---	---	12.5	11.5	12.0
MONTH	6.0	1.5	3.5	11.5	4.0	8.0	16.0	6.5	10.0	16.5	8.5	13.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.5	10.0	10.5	9.0	9.0	9.0	13.5	12.0	12.5			
2	10.0	8.0	9.0	9.0	9.0	9.0	13.5	12.5	13.0			
3	8.5	8.0	8.5	9.5	9.0	9.0	13.5	13.5	13.5			
4	8.5	8.0	8.0	9.5	9.0	9.0	13.5	12.0	13.0			
5	8.5	8.0	8.5	9.5	9.0	9.0	13.5	12.5	13.0			
6	12.0	8.5	10.5	9.5	9.0	9.0	14.0	12.0	13.0			
7	13.5	12.0	12.5	10.0	9.0	9.5	14.0	12.0	13.0			
8	12.0	11.0	11.5	10.5	9.0	9.5	14.5	12.0	13.0			
9	11.0	9.5	10.0	10.0	9.0	9.5	15.5	12.0	13.5			
10	9.5	9.0	9.0	9.0	9.0	9.0	15.5	12.5	14.0			
11	9.5	8.5	9.0	9.5	9.0	9.0	16.0	11.5	13.5			
12	8.5	8.5	8.5	9.5	9.5	9.5	17.0	11.5	14.0			
13	9.5	8.5	9.0	9.5	9.5	9.5	17.0	12.5	15.0			
14	9.0	8.5	8.5	10.0	9.5	9.5	15.0	14.5	15.0			
15	9.0	8.5	8.5	10.0	9.5	9.5	17.5	14.5	15.5			
16	9.0	8.5	9.0	9.5	9.5	9.5	19.0	12.5	15.5			
17	9.0	8.5	9.0	10.0	9.5	9.5	17.0	15.0	16.0			
18	9.5	9.0	9.0	9.5	9.5	9.5	16.5	14.0	15.5			
19	9.5	9.0	9.0	10.5	9.5	10.0	17.5	14.5	16.0			
20	9.0	9.0	9.0	10.0	9.5	10.0	20.5	15.0	17.0			
21	9.0	9.0	9.0	10.0	9.5	10.0	18.5	14.5	16.5			
22	9.0	8.5	9.0	10.0	10.0	10.0	19.5	15.5	17.0			
23	9.0	8.5	8.5	10.0	10.0	10.0	19.5	13.5	16.5			
24	9.0	8.5	8.5	10.0	10.0	10.0	19.5	11.0	15.5			
25	8.5	8.5	8.5	10.0	10.0	10.0	20.5	11.0	16.0			
26	8.5	8.5	8.5	11.0	10.0	10.5	21.0	12.5	16.0			
27	8.5	8.5	8.5	10.5	10.5	10.5	17.0	12.5	15.0			
28	8.5	8.5	8.5	11.0	10.5	10.5	20.0	14.5	16.5			
29	9.0	8.5	9.0	11.0	10.5	11.0	---	---	---			
30	9.0	9.0	9.0	11.5	11.0	11.0	---	---	---			
31	---	---	---	12.0	11.5	11.5	---	---	---			
MONTH	13.5	8.0	9.0	12.0	9.0	9.5	21.0	11.0	15.0			
YEAR	21.0	1.5	8.5									

12197680 BLACK CREEK NEAR MINKLER, WA

LOCATION.--Lat 48°32'34", long 122°06'50", in NW¼NW¼ sec.12, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on right bank 0.6 mi (1.0 km) upstream from former station "Black Creek near Lyman 12197690," 2.8 mi (4.5 km) northwest of Lyman, and 1.1 mi (1.8 km) above mouth.

DRAINAGE AREA.--About 0.5 mi^2 (1.3 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 500 ft (152 m) from topographic map.

REMARKS.--Water-discharge records good except those below 0.10 ft^3/s (0.030 m^3/s), which are poor. No known diversion or regulation above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 107 ft^3/s (3.03 m^3/s) Nov. 24, 1975, gage height, 3.05 ft (0.930 m); minimum, no flow part of each day Jan. 11, 12, 1979 due to freezeup; minimum gage height, 1.16 ft (0.354 m) Aug. 16, Oct. 2, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 53 ft^3/s (1.50 m^3/s) Nov. 7, gage height, 2.68 ft (0.817 m); minimum, no flow part of each day Jan. 11, 12, due to freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	1.2	4.3	.35	.90	2.1	1.6	3.8	.76	1.6	.03	.11
2	.95	1.4	2.9	.24	.84	1.8	1.7	3.6	.57	.95	.03	.11
3	.82	6.5	5.9	.15	.84	2.1	2.4	3.2	.57	.57	.03	.33
4	.70	14	6.5	.10	1.0	4.5	11	4.5	.53	.53	.07	.24
5	.62	4.0	3.8	.07	1.4	15	10	4.7	1.9	.46	.03	.24
6	.57	2.7	2.7	.05	3.4	20	7.8	5.6	1.7	.40	.03	.18
7	.53	14	2.4	.03	3.4	14	5.3	2.9	1.4	.33	.03	.13
8	.53	10	2.1	.02	2.7	6.5	4.7	2.7	.95	.30	.02	.88
9	.57	4.0	1.9	.01	4.0	4.5	4.3	2.4	.66	.30	.02	.57
10	.70	2.7	1.9	.01	4.3	4.7	4.5	1.9	.57	.88	.02	.40
11	1.1	2.1	3.4	.01	5.9	5.3	3.8	1.7	.53	.53	.02	.30
12	.82	1.7	2.5	.09	8.7	6.5	3.2	1.8	.53	.53	.02	.18
13	.70	1.5	2.1	.40	11	4.7	3.6	1.9	.57	.46	.02	.13
14	.62	1.3	2.2	.88	6.5	5.0	4.0	1.8	.46	.40	.02	.11
15	.53	1.3	1.9	1.3	4.5	8.1	3.6	1.8	.46	.33	.02	.07
16	.53	3.2	1.7	1.2	3.4	5.9	3.2	1.8	.57	.24	.02	.07
17	.49	6.9	1.6	1.2	3.0	3.6	3.8	1.4	.57	.18	.03	.07
18	.49	3.4	1.5	1.1	3.8	2.9	4.0	1.3	.53	.18	.03	.07
19	.46	2.7	1.4	1.3	3.4	2.9	3.8	1.1	.66	.13	.07	.03
20	2.1	2.2	1.3	2.7	3.0	3.4	3.6	1.1	.57	.13	.07	.07
21	1.2	1.9	1.4	2.9	2.5	3.8	3.6	.95	.53	.13	.07	.07
22	.82	1.6	3.0	1.9	2.2	3.8	4.5	.76	.46	.11	.18	.07
23	1.4	1.5	8.7	1.7	2.1	4.3	5.3	.76	.40	.11	.11	.07
24	3.0	1.4	11	1.6	1.9	4.0	5.6	.76	.33	.11	.07	.07
25	1.2	1.2	5.3	1.5	2.1	3.2	5.3	.66	.33	.11	.03	.07
26	.95	1.1	3.6	1.4	3.0	2.4	5.9	.76	.30	.07	.03	.03
27	.88	1.6	3.0	1.4	3.0	2.2	6.9	.95	.30	.07	.02	.11
28	.95	2.1	2.0	1.2	2.4	1.9	5.6	2.2	.24	.07	.03	.33
29	1.5	1.7	1.4	1.2	---	1.8	5.3	1.9	.24	.07	.03	.13
30	1.5	5.6	.88	1.0	---	1.7	4.5	1.3	1.1	.07	.07	.13
31	1.3	---	.60	.96	---	1.6	---	.95	---	.07	.11	---
TOTAL	29.53	106.5	94.88	27.97	95.18	154.2	142.4	62.95	19.29	10.42	1.38	5.37
MEAN	.95	3.55	3.06	.90	3.40	4.97	4.75	2.03	.64	.34	.045	.18
MAX	3.0	14	11	2.9	11	20	11	5.6	1.9	1.6	.18	.88
MIN	.46	1.1	.60	.01	.84	1.6	1.6	.66	.24	.07	.02	.03
AC-FT	59	211	188	55	189	306	282	125	38	21	2.7	11

CAL YR 1978 TOTAL 688.02 MEAN 1.88 MAX 14 MIN .15 AC-FT 1360
WTR YR 1979 TOTAL 750.07 MEAN 2.05 MAX 20 MIN .01 AC-FT 1490

SKAGIT RIVER BASIN

12197680 BLACK CREEK NEAR MINKLER, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1975 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1975 to current year.

INSTRUMENTATION.--Temperature recorder installed May 16, 1975.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Record represents water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum recorded, 17.5°C Sept. 18, 1976, Aug. 8, 1978; minimum recorded, 0.0°C sometimes during winter months.

EXTREMES FOR CURRENT YEAR--
WATER TEMPERATURES: Maximum, 16.5°C July 17-20; minimum recorded, 0.0°C Dec. 27 to Jan. 2, Jan. 26-31.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	10.5	11.0	8.0	7.0	7.5	5.0	4.5	4.5	.0	.0	.0
2	11.5	10.0	10.5	8.0	7.5	8.0	4.5	4.0	4.5	.0	.0	.0
3	11.5	10.5	11.0	8.5	7.5	8.0	5.0	4.5	5.0	1.0	.5	1.0
4	11.5	10.0	10.5	7.0	5.5	6.0	5.0	2.5	3.5	1.0	1.0	1.0
5	11.5	10.0	11.0	6.0	5.0	5.5	3.5	3.0	3.0	1.0	1.0	1.0
6	12.5	11.0	12.0	7.5	6.0	6.5	3.0	2.0	2.5	1.5	1.0	1.0
7	12.5	12.0	12.0	8.5	7.5	8.0	2.0	1.5	1.5	1.5	1.5	1.5
8	13.0	12.0	12.5	8.0	5.5	7.0	2.5	1.5	2.0	1.5	1.5	1.5
9	12.5	11.5	12.0	5.5	4.0	5.0	3.5	2.5	3.0	1.5	1.5	1.5
10	11.5	11.0	11.5	4.0	2.5	3.0	5.0	3.5	3.5	2.0	1.0	1.5
11	11.0	10.0	10.5	3.0	2.0	2.5	5.0	4.0	4.5	2.0	2.0	2.0
12	10.0	9.0	9.5	2.5	1.5	2.0	3.5	3.0	3.5	2.5	2.0	2.0
13	10.0	9.0	9.5	3.0	2.0	2.0	3.5	2.5	3.0	3.0	2.5	2.5
14	11.5	10.0	10.5	3.0	2.0	2.5	4.0	3.5	4.0	2.5	2.0	2.5
15	12.0	11.0	11.5	4.5	3.0	3.5	3.5	3.0	3.0	2.0	1.5	2.0
16	12.0	11.5	11.5	5.5	4.5	5.0	3.5	3.5	3.5	2.5	1.5	2.0
17	12.5	11.5	12.0	5.5	5.0	5.0	4.0	3.5	3.5	2.5	2.0	2.5
18	12.5	11.5	12.0	5.0	2.5	4.0	3.5	3.0	3.5	2.5	2.0	2.5
19	12.5	12.0	12.0	2.5	2.0	2.0	3.0	3.0	3.0	3.0	2.5	3.0
20	12.0	9.0	11.0	2.5	1.5	2.0	3.5	2.5	3.0	4.0	3.0	3.5
21	9.5	8.0	9.0	2.5	1.5	2.0	3.5	3.0	3.5	3.0	2.0	2.5
22	9.5	8.5	9.0	2.5	2.0	2.5	4.0	3.5	4.0	2.5	2.0	2.0
23	10.5	9.0	9.5	3.0	2.0	2.5	4.5	4.0	4.0	3.0	2.5	2.5
24	9.5	8.0	8.5	4.5	3.0	4.0	4.5	3.5	4.0	3.0	2.0	2.5
25	8.5	7.0	7.5	5.0	4.0	4.5	4.0	3.0	3.5	1.5	1.0	1.0
26	8.0	7.0	7.5	5.0	4.0	4.5	3.0	2.5	2.5	1.0	.0	1.0
27	8.5	8.0	8.0	5.0	3.5	4.0	2.5	.0	1.5	1.0	.0	.5
28	8.5	7.5	8.5	5.5	4.5	5.0	.0	.0	.0	.5	.0	.5
29	7.5	6.5	7.0	5.0	4.5	5.0	.0	.0	.0	.5	.0	.0
30	7.5	6.0	6.5	5.5	4.5	5.0	.0	.0	.0	.5	.0	.0
31	7.5	6.0	6.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	13.0	6.0	10.0	8.5	1.5	4.5	5.0	.0	3.0	4.0	.0	1.5

12197680 BLACK CREEK NEAR MINKLER, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	3.0	2.5	3.0	5.0	3.5	4.0	8.0	7.0	7.5
2	---	---	---	4.0	2.5	3.0	5.5	3.5	4.0	8.0	7.0	7.0
3	---	---	---	4.0	3.0	3.5	4.5	4.0	4.0	8.5	7.0	8.0
4	---	---	---	6.0	4.5	5.5	4.5	4.0	4.0	8.5	7.5	7.5
5	---	---	---	5.5	4.5	5.0	7.5	4.5	5.5	8.0	6.0	7.0
6	---	---	---	6.0	4.5	5.5	5.5	4.5	5.0	7.0	5.5	6.0
7	---	---	---	5.5	4.0	4.5	6.5	4.5	5.5	7.5	6.0	6.5
8	---	---	---	5.5	3.5	4.0	5.5	5.0	5.5	8.5	6.5	7.0
9	---	---	---	6.5	3.5	4.5	5.5	4.5	5.0	8.0	6.5	7.0
10	---	---	---	7.0	5.0	5.5	5.5	3.5	4.5	7.5	6.0	6.5
11	---	---	---	6.0	4.5	5.5	6.0	4.0	5.0	8.5	6.0	7.5
12	---	---	---	6.0	4.0	5.0	5.0	4.5	4.5	7.5	7.0	7.0
13	---	---	---	7.0	4.0	5.5	5.5	4.5	5.0	10.0	7.5	8.5
14	---	---	---	7.0	5.0	6.0	5.5	4.0	4.5	10.5	7.0	8.5
15	---	---	---	6.0	4.5	5.5	5.5	4.5	5.0	10.0	8.0	9.0
16	---	---	---	5.5	4.0	5.0	5.5	4.5	5.0	9.5	8.0	8.5
17	---	---	---	5.5	4.0	5.0	6.5	4.5	5.0	8.5	7.0	8.0
18	---	---	---	6.5	4.5	5.5	6.0	4.5	4.5	9.5	7.5	8.5
19	---	---	---	7.0	4.0	5.5	5.5	4.0	4.5	9.5	6.5	8.0
20	---	---	---	7.0	4.5	5.5	7.5	3.5	5.0	10.0	8.0	9.0
21	---	---	---	7.5	4.5	5.5	7.5	4.5	6.0	11.0	8.5	9.5
22	---	---	---	7.5	4.5	6.0	9.0	5.5	6.5	11.5	9.5	10.5
23	---	---	---	8.0	5.0	6.0	9.0	5.5	6.5	11.5	10.5	11.0
24	4.0	2.5	3.0	7.5	4.5	5.5	8.5	5.0	6.5	12.0	10.5	11.0
25	5.0	4.0	4.5	5.5	5.0	5.0	9.0	5.0	6.5	12.5	10.0	11.5
26	5.0	4.0	4.5	6.0	4.5	5.0	10.0	5.5	7.0	12.0	9.0	11.0
27	4.0	3.5	3.5	6.5	4.5	5.0	10.0	6.0	7.5	9.0	8.0	8.5
28	4.0	2.5	3.0	5.5	4.5	5.0	9.5	6.5	7.5	7.5	6.5	7.0
29	---	---	---	5.0	4.0	4.5	8.5	7.0	7.5	8.5	7.0	7.5
30	---	---	---	5.5	4.0	4.5	9.5	6.5	8.0	10.0	7.0	8.5
31	---	---	---	4.5	3.5	4.0	---	---	---	11.0	8.5	10.0
MONTH	5.0	2.5	3.5	8.0	2.5	5.0	10.0	3.5	5.5	12.5	5.5	8.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.5	10.0	11.0	9.5	8.5	9.0	15.0	14.0	14.5	14.5	14.0	14.0
2	13.5	10.0	12.0	9.5	8.5	9.0	14.5	13.0	14.0	14.5	13.5	14.0
3	12.5	11.5	12.0	12.0	9.5	10.5	14.0	13.0	13.5	13.5	13.0	13.5
4	11.5	11.0	11.5	12.0	11.0	11.5	14.5	12.5	13.5	13.5	12.5	13.0
5	11.0	9.0	10.0	13.0	11.5	12.0	14.0	12.5	13.0	13.5	13.0	13.0
6	9.0	8.0	8.5	13.0	11.5	12.0	14.0	12.0	13.0	13.5	13.0	13.5
7	10.0	7.5	8.5	13.0	12.0	12.5	14.0	12.0	13.0	14.5	13.5	14.0
8	11.0	8.5	9.5	14.0	12.5	13.0	14.0	12.5	13.5	14.5	12.5	13.5
9	11.5	9.5	10.5	14.5	13.0	14.0	14.5	13.0	13.5	13.0	12.0	12.5
10	12.0	10.0	11.0	13.5	12.5	13.0	14.5	13.5	14.0	12.5	11.5	12.0
11	11.0	9.5	10.5	12.5	11.5	12.0	14.5	12.5	13.5	12.5	11.0	12.0
12	11.0	9.0	10.0	12.5	11.5	11.5	14.5	12.5	13.5	13.5	12.0	12.5
13	10.5	9.0	9.5	12.0	11.0	11.5	14.5	13.5	14.0	14.5	12.5	13.5
14	10.5	8.0	9.0	13.0	11.0	12.0	14.0	13.5	13.5	15.5	14.0	15.0
15	10.5	9.0	9.5	14.5	12.0	13.0	14.5	13.5	13.5	15.0	14.0	14.5
16	10.0	9.0	9.5	16.0	13.5	14.5	15.0	13.5	14.0	15.0	13.5	14.5
17	9.5	9.0	9.0	16.5	14.5	15.5	14.5	14.0	14.0	14.0	13.0	13.5
18	9.5	9.5	9.5	16.5	15.0	15.5	14.0	14.0	14.0	15.0	13.5	14.0
19	9.5	9.0	9.5	16.5	14.5	15.5	14.0	13.5	14.0	14.5	13.5	14.0
20	10.0	9.0	9.5	16.5	15.0	15.5	14.5	13.5	14.0	14.0	14.0	14.0
21	10.5	8.5	9.5	15.0	14.0	14.5	14.5	14.0	14.5	14.5	13.0	13.5
22	10.5	9.5	10.0	14.5	12.5	13.5	14.5	14.0	14.5	13.5	12.5	13.0
23	11.5	9.5	10.5	14.5	12.5	13.5	15.0	14.0	14.5	13.5	12.0	12.5
24	12.5	10.0	11.0	14.5	13.0	14.0	15.0	13.5	14.0	13.5	12.0	13.0
25	13.5	11.0	12.0	15.0	13.5	14.0	15.0	13.5	14.5	14.0	13.0	13.5
26	13.5	11.0	12.0	15.0	13.5	14.5	15.0	14.0	14.5	14.0	13.5	14.0
27	13.0	11.0	12.0	14.5	13.0	14.0	14.5	14.0	14.0	13.5	13.0	13.5
28	13.5	11.0	12.0	13.5	13.0	13.0	15.0	14.0	14.5	13.0	11.5	12.0
29	12.0	11.0	11.5	14.0	12.0	13.0	14.5	13.5	14.0	12.0	11.5	12.0
30	11.0	10.0	11.0	14.5	12.5	13.5	14.0	13.5	13.5	13.0	12.0	12.5
31	---	---	---	15.5	14.0	14.5	14.5	13.0	13.5	---	---	---
MONTH	13.5	7.5	10.5	16.5	8.5	13.0	15.0	12.0	14.0	15.5	11.0	13.5
YEAR	16.5	.0	8.0									

12197700 WISEMAN CREEK NEAR LYMAN, WA

LOCATION.--Lat 48°31'49", long 122°08'08", in SW¼SW¼ sec.11, T.35 N., R.5 E., Skagit County, Hydrologic Unit 17110007, on left bank 200 ft (61 m) upstream from State Highway 20 crossing, and 3.4 mi (5.5 km) west of Lyman.

DRAINAGE AREA.--About 3 mi² (7.8 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1974 to current year.

REVISED RECORDS.--WDR WA-76-1: 1974 (M), 1975.

GAGE.--Water-stage recorder. Altitude of gage is 100 ft (30.5 m) from topographic map.

REMARKS.--Water discharge records good except those above 25 ft³/s (0.85 m³/s) which are poor. No known regulation or diversion above station.

AVERAGE DISCHARGE.--5 years, 13.3 ft³/s (0.38 m³/s), 9,640 acre-ft/yr (11.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 525 ft³/s (14.9 m³/s) Dec. 1, 1977, gage height, 3.69 ft (1.125 m) from rating extended above 184 ft³/s (5.21 m³/s); maximum gage height, 4.23 ft (1.289 m) Dec. 2, 1975; minimum, 0.65 ft³/s (0.018 m³/s) Sept. 25, 1974, Aug. 17, 18, 1977; minimum gage height, 1.24 ft (0.378 m) Aug. 9, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 236 ft³/s (6.68 m³/s) Nov. 3, gage height, 3.03 f. (0.924 m); minimum, 0.72 ft³/s (0.020 m³/s) Sept. 18, 19, 25, 26, 27, gage height, 1.27 ft (0.387 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.4	6.1	22	7.8	5.8	13	9.3	18	5.1	7.5	1.2	1.1
2	7.4	7.1	15	7.6	5.5	12	9.9	18	4.7	4.9	1.3	1.2
3	6.5	26	26	7.4	5.2	14	14	16	4.5	3.7	1.4	2.8
4	6.0	62	28	7.2	6.0	30	64	22	4.5	3.1	1.4	2.1
5	5.2	16	21	6.9	9.3	95	55	26	9.3	2.8	1.3	2.5
6	4.3	11	16	6.7	18	110	35	29	7.2	2.6	1.3	2.0
7	4.1	46	14	6.5	19	90	26	17	6.3	2.5	1.2	1.5
8	4.0	39	12	6.3	14	38	25	16	5.3	2.5	1.3	4.5
9	4.3	16	12	6.0	24	28	23	13	4.7	2.2	1.2	3.9
10	5.9	12	12	9.3	22	29	24	12	4.3	5.5	1.2	2.2
11	6.8	10	21	8.4	32	29	28	10	4.3	3.3	1.2	1.7
12	4.8	9.6	16	8.7	55	36	18	10	4.1	3.5	1.1	1.3
13	4.2	9.0	14	9.3	70	27	21	11	4.9	2.9	1.1	1.0
14	3.8	8.1	14	8.4	35	28	19	9.6	3.9	2.6	1.2	.83
15	3.6	8.1	13	7.5	24	54	19	9.3	3.7	2.3	1.3	.77
16	3.5	14	12	7.2	19	31	19	9.0	4.5	2.1	1.2	.77
17	3.4	28	11	6.9	17	22	20	8.1	4.5	1.8	1.3	.83
18	3.3	17	11	6.6	26	18	22	7.5	4.1	1.7	1.5	.77
19	3.1	13	9.6	7.2	23	18	20	6.9	4.9	1.7	1.6	.77
20	13	11	9.3	16	19	21	18	6.3	4.3	1.6	1.5	.83
21	6.1	9.9	18	16	16	21	18	6.1	3.7	1.6	1.4	.96
22	4.5	9.3	19	11	14	21	22	5.7	3.3	1.6	2.2	.96
23	7.3	8.7	39	9.9	13	21	26	5.7	3.1	1.6	1.5	.83
24	15	8.1	58	9.0	12	21	25	5.3	3.0	1.5	1.3	.83
25	6.9	8.1	24	8.4	14	17	25	5.1	2.8	1.5	1.2	.77
26	5.5	7.5	18	7.8	19	14	28	5.5	2.7	1.4	1.1	.72
27	5.4	8.7	15	8.1	18	13	30	6.3	2.5	1.4	1.1	.96
28	5.5	11	11	7.2	14	12	26	12	2.4	1.4	1.0	2.2
29	8.2	9.0	9.3	6.9	---	11	24	8.7	2.2	1.4	.96	1.2
30	7.8	22	8.7	6.6	---	10	21	6.3	5.7	1.3	.96	1.2
31	6.6	---	8.1	6.1	---	9.3	---	5.5	---	1.3	1.1	---
TOTAL	184.4	471.3	529.0	254.9	568.8	913.3	726.2	346.9	130.5	76.8	39.62	44.00
MEAN	5.95	15.7	17.1	8.22	20.3	29.5	24.2	11.2	4.35	2.48	1.28	1.47
MAX	15	62	58	16	70	110	64	29	9.3	7.5	2.2	4.5
MIN	3.1	6.1	8.1	6.0	5.2	9.3	9.3	5.1	2.2	1.3	.96	.72
AC-FT	366	935	1050	506	1130	1810	1440	688	259	152	79	87

CAL YR 1978 TOTAL 3885.52 MEAN 10.6 MAX 62 MIN .92 AC-FT 7710
WTR YR 1979 TOTAL 4285.72 MEAN 11.7 MAX 110 MIN .72 AC-FT 8500

12197700 WISEMAN CREEK NEAR LYMAN, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: April 1974 to current year.

INSTRUMENTATION.--Temperature recorder installed April 24, 1974.

REMARKS.--Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 16.5°C Aug. 12, 13, 17, 1977, July 22, 23, 1978, Aug. 8, 9, 1978; minimum, 0.5°C Dec. 30, 1978 to Jan. 1, 1979.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 16.0°C July 18, 20; minimum, 0.5°C Dec. 30 to Jan. 1.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.0	11.5	11.5	8.5	7.0	8.0	6.0	5.0	5.5	1.5	.5	1.0
2	11.0	10.0	10.5	8.0	7.5	8.0	6.0	5.0	5.5	2.0	1.5	2.0
3	11.5	10.5	11.0	8.5	8.0	8.5	6.0	5.5	5.5	2.5	1.5	2.0
4	11.0	9.5	10.5	7.5	6.0	7.0	5.5	4.0	4.5	2.5	2.0	2.0
5	11.0	9.5	10.5	7.0	5.5	6.0	4.5	4.0	4.0	2.0	1.5	2.0
6	12.0	10.0	11.0	8.0	6.5	7.5	4.0	3.0	3.5	2.0	1.5	1.5
7	12.5	11.5	12.0	9.0	8.0	8.5	3.5	2.5	3.0	2.5	1.5	2.0
8	12.5	11.5	12.0	8.5	6.5	7.5	4.0	3.5	3.5	2.5	1.5	2.0
9	11.5	11.0	11.5	6.0	4.5	5.5	5.0	4.0	4.5	3.0	2.5	3.0
10	11.0	10.5	11.0	4.5	3.5	4.0	6.0	4.5	5.0	3.5	2.5	3.0
11	11.0	10.0	10.5	4.0	2.5	3.5	6.0	4.5	5.0	3.5	3.0	3.0
12	10.0	8.5	9.5	3.5	2.5	3.0	4.5	4.0	4.5	3.5	3.5	3.5
13	10.0	8.5	9.0	3.5	2.5	3.0	4.5	3.5	4.0	4.0	3.5	3.5
14	10.5	9.0	9.5	4.0	3.0	3.5	5.0	4.5	5.0	3.5	3.0	3.5
15	11.5	10.0	10.5	5.0	3.5	4.5	5.0	4.0	4.5	3.5	3.0	3.0
16	11.5	11.0	11.0	6.0	5.5	6.0	5.0	4.5	4.5	3.5	3.0	3.5
17	12.0	11.0	11.5	6.0	5.5	6.0	5.0	4.5	5.0	4.0	3.0	3.5
18	11.5	10.0	11.0	6.0	4.0	5.0	5.0	4.5	5.0	4.0	3.0	3.5
19	11.5	10.5	11.0	4.0	3.0	3.5	4.5	4.5	4.5	4.5	4.0	4.0
20	11.5	9.5	11.0	3.5	3.0	3.0	5.0	4.5	4.5	5.0	3.5	4.5
21	9.5	8.0	8.5	3.5	2.5	3.0	5.0	5.0	5.0	3.5	3.0	3.5
22	9.5	8.0	9.0	3.5	3.0	3.0	5.5	4.5	5.0	3.5	3.0	3.0
23	10.5	9.0	10.0	4.5	3.0	4.0	5.0	4.0	5.0	4.5	3.5	4.0
24	10.0	8.0	9.0	5.5	4.5	5.0	5.0	4.0	4.5	4.0	3.5	3.5
25	8.5	7.0	7.5	5.5	4.5	5.5	4.5	3.5	4.0	3.5	2.5	3.0
26	8.0	6.5	7.5	5.5	4.5	5.5	4.0	3.5	3.5	3.0	2.5	3.0
27	9.0	8.5	8.5	5.5	4.0	5.0	3.5	2.0	3.0	3.0	2.5	2.5
28	9.0	8.0	9.0	6.0	5.5	5.5	1.5	1.0	1.5	2.5	2.0	2.5
29	8.0	6.5	7.5	6.0	5.5	5.5	1.5	1.0	1.0	2.5	2.0	2.0
30	7.5	6.5	7.0	6.0	5.5	5.5	1.0	.5	1.0	2.5	1.5	2.0
31	7.5	6.0	7.0	---	---	---	1.0	.5	.5	2.0	1.0	1.5
MONTH	12.5	6.0	10.0	9.0	2.5	5.5	6.0	.5	4.0	5.0	.5	3.0

12197700 WISEMAN CREEK NEAR LYMAN, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	2.0	1.0	1.5	4.5	3.5	4.0	6.0	5.0	5.0	8.5	8.0	8.0
2	2.0	1.0	1.5	5.5	3.5	4.5	6.0	4.5	5.0	8.5	7.5	8.0
3	2.5	2.0	2.0	5.0	4.5	5.0	5.5	4.5	5.0	9.0	8.0	8.5
4	3.0	2.5	3.0	6.5	5.0	6.0	5.0	4.5	4.5	9.0	8.5	8.5
5	3.5	2.5	3.0	6.0	5.0	5.5	7.5	5.0	6.0	8.5	7.0	8.0
6	3.5	3.0	3.0	6.5	5.0	6.0	6.5	5.0	6.0	8.0	6.5	7.0
7	3.5	3.0	3.0	6.0	4.5	5.0	7.0	5.0	6.0	8.0	7.0	7.5
8	4.5	3.5	4.0	6.0	3.5	5.0	6.0	5.5	6.0	8.5	7.5	8.0
9	4.5	4.0	4.5	6.5	4.0	5.0	6.0	5.0	5.5	9.0	7.5	8.0
10	4.5	4.0	4.0	7.5	5.0	6.0	6.5	4.5	5.5	8.0	7.0	7.5
11	5.0	4.0	4.5	7.0	5.0	6.0	7.0	4.5	5.5	9.0	7.0	8.0
12	5.0	4.0	4.5	6.5	4.5	5.5	6.0	5.0	5.5	8.0	7.5	8.0
13	5.5	3.5	4.5	7.0	4.5	5.5	6.0	5.5	5.5	10.0	8.0	9.0
14	3.5	2.5	3.0	7.0	5.5	6.5	6.5	4.5	5.5	10.5	8.0	9.0
15	3.5	2.5	3.0	6.5	5.0	6.0	6.0	5.0	5.5	10.5	8.5	9.5
16	4.0	3.5	4.0	6.5	5.0	5.5	6.5	5.0	5.5	10.5	9.0	9.5
17	4.5	3.5	4.0	6.5	4.5	5.5	6.5	5.0	6.0	9.5	8.0	8.5
18	5.0	4.5	4.5	7.0	5.0	6.0	6.5	5.0	5.5	10.0	8.5	9.0
19	5.0	4.0	4.5	7.0	4.5	6.0	6.5	5.0	5.5	10.0	7.5	8.5
20	4.5	3.5	4.0	7.0	4.5	6.0	8.0	4.5	6.0	10.0	8.5	9.0
21	5.0	4.0	4.5	7.0	4.5	6.0	8.0	5.0	6.5	11.0	8.5	9.5
22	5.0	3.5	4.0	8.0	5.0	6.5	9.5	6.0	7.5	11.0	9.0	9.5
23	4.5	4.0	4.5	8.0	5.5	6.5	9.0	6.0	7.0	11.5	10.5	11.0
24	5.0	4.0	4.5	7.5	5.0	6.5	8.5	5.5	7.0	12.0	10.5	11.0
25	6.0	5.0	5.5	6.5	5.5	6.0	9.0	6.0	7.5	12.0	10.0	11.0
26	5.5	5.0	5.5	7.0	5.5	6.0	10.0	6.0	8.0	11.5	9.5	11.0
27	5.0	4.5	5.0	7.0	5.5	6.0	10.5	7.0	8.5	9.5	8.5	9.0
28	5.0	3.5	4.5	6.5	5.0	6.0	10.0	7.5	8.5	8.5	7.5	8.0
29	---	---	---	6.0	5.5	5.5	9.5	8.0	8.5	9.5	7.5	8.5
30	---	---	---	6.5	5.0	5.5	9.5	7.5	8.5	10.0	8.0	9.0
31	---	---	---	6.0	4.5	5.5	---	---	---	11.0	8.5	10.0
MONTH	6.0	1.0	4.0	8.0	3.5	5.5	10.5	4.5	6.5	12.0	6.5	9.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.0	9.5	11.0	10.5	9.5	9.5	15.0	13.5	14.0	14.5	13.5	14.0
2	13.0	10.5	11.5	10.5	9.5	10.0	14.5	12.5	13.5	14.5	13.5	14.0
3	12.5	11.0	12.0	12.0	9.5	10.5	14.0	13.0	13.5	13.5	13.0	13.5
4	11.5	11.0	11.5	12.0	11.0	11.5	14.0	12.0	13.0	14.0	13.0	13.5
5	11.0	10.0	10.5	12.5	11.0	12.0	14.0	12.5	13.0	13.5	13.0	13.5
6	10.0	9.0	9.5	13.0	11.0	12.0	14.0	11.5	12.5	14.0	13.0	13.5
7	10.5	8.0	9.5	13.0	12.0	12.5	14.0	11.5	12.5	15.0	13.5	14.0
8	11.0	9.0	10.0	14.0	12.5	13.0	14.0	12.0	13.0	14.5	13.0	13.5
9	11.5	9.5	10.5	14.5	13.0	13.5	14.5	12.0	13.0	13.5	12.5	13.0
10	12.0	10.0	11.0	13.5	12.5	13.0	14.0	12.5	13.0	13.0	12.0	12.5
11	11.5	10.0	10.5	13.0	12.0	12.5	14.0	12.0	13.0	13.0	11.0	12.0
12	11.0	9.5	10.0	13.0	11.5	12.0	14.0	12.0	13.0	13.5	11.5	12.5
13	11.0	9.5	10.0	12.5	11.0	11.5	14.5	12.5	13.5	14.0	11.5	12.5
14	11.0	8.5	9.5	13.0	10.5	12.0	13.5	13.0	13.0	15.0	13.0	14.0
15	10.5	9.0	10.0	14.0	11.5	12.5	14.0	13.0	13.5	14.5	13.0	14.0
16	10.0	9.5	10.0	15.0	13.0	14.0	14.5	12.5	13.5	14.5	13.0	14.0
17	10.0	9.0	9.5	15.5	13.5	14.5	14.0	13.5	13.5	14.0	12.0	13.0
18	10.0	9.5	10.0	16.0	14.0	15.0	14.0	13.0	13.5	14.0	12.0	13.0
19	10.0	9.5	9.5	15.5	13.5	14.5	14.0	13.0	13.5	14.0	12.5	13.5
20	10.5	9.5	10.0	16.0	13.5	14.5	14.5	13.0	13.5	13.5	13.5	13.5
21	11.0	8.5	10.0	14.5	13.5	14.0	14.5	13.5	14.0	14.0	13.0	13.5
22	11.0	9.5	10.0	14.5	12.0	13.5	14.5	13.5	14.0	13.5	11.5	12.5
23	12.0	10.0	11.0	14.5	12.5	13.5	14.5	13.5	14.0	13.0	11.5	12.0
24	12.5	10.0	11.0	14.5	12.5	13.5	14.5	13.0	14.0	13.0	11.0	12.0
25	13.0	10.5	12.0	14.5	12.5	13.5	15.0	13.0	14.0	13.5	11.5	12.5
26	13.0	11.0	12.0	15.0	13.0	14.0	15.0	13.0	14.0	13.5	13.0	13.0
27	12.5	11.0	12.0	14.0	13.0	13.5	14.0	13.5	13.5	13.5	12.5	13.0
28	13.0	10.5	12.0	13.0	12.5	13.0	14.5	13.5	14.0	12.5	11.5	12.0
29	11.5	11.0	11.0	13.5	12.0	12.5	14.5	13.0	13.5	12.5	11.5	12.0
30	11.5	10.5	11.0	14.5	12.0	13.0	13.5	13.0	13.5	13.0	12.0	12.5
31	---	---	---	15.0	13.0	14.0	14.0	13.0	13.5	---	---	---
MONTH	13.0	8.0	10.5	16.0	9.5	13.0	15.0	11.5	13.5	15.0	11.0	13.0
YEAR	16.0	.5	8.0									

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA

LOCATION.--Lat 48°29'03", long 122°14'31", in NW¼NW¼ sec.36, T.35 N., R.4 E., Skagit County, Hydrologic Unit 17110007, in left bank pier of bridge on State Highway No. 9, 1.0 mi (1.6 km) south of Sedro Woolley, and at mile 22.3 (35.9 km).

DRAINAGE AREA.--3,015 mi² (7,809 km²), of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1908-1924, February 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 15.46 ft (4.712 m) National Geodetic Vertical Datum of 1929. May 1, 1908 to Dec. 31, 1923 nonrecording gage at site 200 ft (61 m) upstream at datum 24.4 ft (7.44 m) lower.

REMARKS.--Water-discharge records good. Flow regulated for powerplants on Baker and upper Skagit Rivers by Ross Reservoir (see sta 12175000) and by Diablo and Gorge Reservoirs (see sta 12176500 and 12177700), Baker Lake (12191600) and Lake Shannon (12193000). Small diversions for domestic and municipal use.

AVERAGE DISCHARGE.--20 years (water years 1909-24, 1976-79) 16,020 ft³/s (454 m³/s); 11,610,000 acre-ft/yr (14,300 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge observed, 220,000 ft³/s (6,230 m³/s) Nov. 30, 1909, gage height, 56.5 ft (17.22 m) datum then in use, from rating curve extended above 62,000 ft³/s (1,760 m³/s); minimum observed, 2,830 ft³/s (80.1 m³/s) Sept 29-30, Oct. 10-11, 1915.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of about 1815 reached a stage of approximately 39.1 ft (11.92 m), present datum, discharge about 400,000 ft³/s (11,300 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50,000 ft³/s (1,420 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 8	1100	*42,700	1,210	*15.67	4.776

Minimum daily discharge, 5,100 ft³/s (144 m³/s) Sept. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13100	7580	11800	12200	11400	10100	7300	19000	14100	17400	8990	7630
2	10400	9020	10600	11800	10500	8680	9470	17900	18500	15700	9450	10100
3	11100	12000	10800	13000	10600	7690	9460	15600	19700	13000	9260	11800
4	10900	30700	13100	14200	7970	10200	9560	17600	19600	12200	7880	12300
5	9720	20000	14900	13700	8840	24200	11300	20200	22400	12300	7600	9730
6	8150	15100	14000	12000	10200	27800	11300	19400	23600	13400	8340	10600
7	7050	18000	12700	9280	14200	32100	11100	16800	18700	11200	8080	9700
8	6050	35100	12500	8280	10500	25800	11200	14500	16000	10900	7630	9480
9	5780	24400	10700	10600	10300	20300	11800	12600	14700	13100	7600	11500
10	7140	20200	9280	12100	10900	15500	11800	12100	15200	16100	7300	11500
11	9780	18400	13100	12100	11400	13400	11400	10800	18900	17300	6820	9980
12	8820	17400	14600	12100	14300	14100	11300	11000	20800	15100	6600	8570
13	7940	16700	14500	11500	17900	14900	13400	12500	19100	13900	7740	8310
14	6970	14700	13600	9540	19000	14400	14700	12900	16900	11900	8250	7880
15	5830	13000	12300	10100	15300	14300	12800	14500	14300	11300	9200	7110
16	5610	13700	12700	11200	13900	15700	11500	16000	13100	12400	8430	6200
17	6570	15700	9690	11200	12100	14400	11300	16400	12100	15400	9290	5900
18	6370	14900	11000	10700	13000	12800	11200	15200	13500	16400	9600	7600
19	6200	14100	10000	8610	11800	13300	10900	13900	13500	16800	7000	7240
20	6710	14400	11100	7110	11700	12200	10700	13000	14000	14500	5200	6710
21	8360	14200	9960	7210	10900	11900	9140	14100	12100	14300	6500	8930
22	6450	14200	9070	7110	8760	12000	7510	18500	12200	12700	10400	8140
23	6280	12400	8820	8380	8370	11700	7750	20600	11400	12100	8930	5610
24	8350	11000	10900	8150	8430	10100	8280	21100	12000	13100	7430	5100
25	9720	9920	9240	8980	10100	12100	9530	20600	13800	12100	8660	6840
26	7980	10300	8900	11900	12900	11900	9880	20400	15100	12100	7820	5660
27	7730	11300	8900	12100	12300	9160	11200	20900	15500	11300	8280	5730
28	7000	12200	11300	11700	11300	10000	14200	18100	16400	10300	9570	7990
29	6740	10600	12200	11800	---	11000	16100	16100	16900	9450	9140	7000
30	6300	10600	12300	12000	---	10500	18500	15000	15900	9360	8690	6000
31	7150	---	12700	11300	---	7710	---	13100	---	7850	6690	---
TOTAL	242250	461820	357260	331950	328870	439940	335580	500400	480000	404960	252370	246840
MEAN	7815	15390	11520	10710	11750	14190	11190	16140	16000	13060	8141	8228
MAX	13100	35100	14900	14200	19000	32100	18500	21100	23600	17400	10400	12300
MIN	5610	7580	8820	7110	7970	7690	7300	10800	11400	7850	5200	5100
AC-FT	480500	916000	708600	658400	652300	872600	665600	992500	952100	803200	500600	489600

CAL YR 1978 TOTAL 5020440 MEAN 13750 MAX 35100 MIN 5610 AC-FT 9958000
WTR YR 1979 TOTAL 4382240 MEAN 12010 MAX 35100 MIN 5100 AC-FT 8692000

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974, October 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to current year.
pH: June 1977 to current year.
WATER TEMPERATURE: October 1975 to current year.
DISSOLVED OXYGEN: October 1975 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1975.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. In addition to water-quality monitor record, field checks were taken approximately twice weekly by the observer, some of which are included in this report; daily random instantaneous water-quality monitor data obtained from a satellite data platform are also included.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum recorded, 69 micromhos Aug. 20, 1979; minimum recorded, 20 micromhos Feb. 6, 7, 8, 1978.
pH: Maximum recorded, 7.8 units July 15, 21, 22, 1977; minimum recorded, 7.0 units July 19, Nov. 27, 28, 1977, June 3, 28, 29, Sept. 23, 24, 1978.
WATER TEMPERATURES: Maximum recorded, 18.0°C July 31, 1979; minimum recorded, 1.0°C Dec. 29, 1978 to Jan. 1, 1979.
DISSOLVED OXYGEN: Maximum recorded, 13.3 mg/L Dec. 5, 8. 1975, Mar. 21, 1977; minimum observed, 8.9 mg/l Aug. 12, 1979.

EXTREMES OUTSIDE PERIOD OF DAILY RECORD.--A Specific conductance of 77 micromhos was observed Feb. 11, 1974. A pH of 8.6 units was observed Mar. 24, 1976. A temperature of 14.9°C was observed on Aug. 26, 1974.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum recorded, 69 micromhos Aug. 20; minimum recorded, 23 micromhos July 12.
pH: Maximum recorded, 7.6 units Aug. 9; minimum recorded, 7.1 units Oct. 13, July 12.
WATER TEMPERATURES: Maximum recorded, 18.0°C July 31; minimum recorded, 1.0°C Dec. 29-Jan. 1.
DISSOLVED OXYGEN: Maximum recorded, 13.2 mg/L Dec. 13; minimum observed, 8.9 mg/L Aug. 12.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	52	46	49				---	---	---	43	37	39
2	51	46	49				---	---	---	43	39	40
3	52	44	48				---	---	---	40	38	39
4	53	43	48				---	---	---	40	37	39
5	56	45	50				---	---	---	44	37	40
6	59	48	53				---	---	---	46	39	43
7	61	55	58				---	---	---	46	44	45
8	65	57	61				---	---	---	46	43	45
9	63	56	60				---	---	---	48	43	45
10	57	50	55				---	---	---	50	46	48
11	51	44	47				---	---	---	51	45	48
12	50	42	46				---	---	---	46	45	45
13	52	45	48				---	---	---	46	45	45
14	56	47	51				46	43	44	---	---	---
15	59	51	56				47	43	45	48	45	45
16	60	56	59				46	42	44	50	44	46
17	59	56	58				52	44	48	49	45	46
18	58	56	57				50	44	46	---	---	---
19	---	---	---				49	44	47	---	---	---
20	---	---	---				49	44	46	---	---	---
21	---	---	---				51	45	49	---	---	---
22	---	---	---				52	48	51	---	---	---
23	---	---	---				52	48	49	---	---	---
24	---	---	---				48	39	42	---	---	---
25	---	---	---				42	36	39	---	---	---
26	---	---	---				45	42	43	---	---	---
27	---	---	---				46	43	45	---	---	---
28	---	---	---				48	41	43	---	---	---
29	---	---	---				41	39	40	---	---	---
30	---	---	---				39	35	37	---	---	---
31	---	---	---				39	38	38	---	---	---
MONTH	65	42	53				52	35	44	51	37	44

12199000 SKAGIT RIVER NEAR SEDRO-WOOLLEY, WA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	42	37	40	59	54	56	61	58	60
2	---	---	---	40	36	38	58	48	52	59	55	57
3	---	---	---	46	38	42	58	51	54	54	49	51
4	---	---	---	51	44	47	62	52	56	52	48	50
5	---	---	---	51	47	48	65	54	59	54	51	52
6	---	---	---	51	45	47	63	53	58	55	49	52
7	---	---	---	48	43	46	66	55	60	56	51	54
8	---	---	---	46	42	44	67	56	60	57	53	55
9	---	---	---	47	43	45	68	57	61	54	49	52
10	---	---	---	47	43	45	65	57	60	52	46	48
11	---	---	---	45	38	43	65	58	60	56	47	52
12	---	---	---	41	23	38	65	55	59	59	51	55
13	---	---	---	46	40	43	63	57	60	60	53	57
14	---	---	---	47	42	44	58	55	57	63	57	59
15	---	---	---	50	39	46	57	52	55	63	56	59
16	---	---	---	53	46	49	61	55	58	63	57	60
17	---	---	---	50	46	48	60	56	58	65	57	60
18	---	---	---	48	43	45	57	52	55	61	55	57
19	---	---	---	48	43	45	63	54	58	59	56	58
20	---	---	---	51	43	46	69	63	66	60	56	58
21	---	---	---	51	45	48	66	61	64	56	52	55
22	---	---	---	50	45	47	61	57	59	60	52	56
23	---	---	---	51	43	47	61	56	58	66	55	59
24	---	---	---	51	45	48	64	58	60	66	61	64
25	---	---	---	52	44	47	64	56	60	63	55	59
26	42	34	38	51	43	47	63	60	61	65	62	63
27	46	39	43	49	41	44	61	54	58	64	59	61
28	45	41	43	48	45	47	58	52	55	62	56	60
29	47	42	44	51	43	47	57	54	55	59	52	56
30	44	34	41	55	47	51	56	54	56	60	50	53
31	---	---	---	58	50	53	62	54	57	---	---	---
MONTH	47	34	42	58	23	46	69	48	58	66	46	56

PH (UNITS), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	7.3	7.2	7.2				---	---	---	7.3	7.3	7.3
2	7.2	7.2	7.2				---	---	---	7.4	7.3	7.3
3	7.2	7.2	7.2				---	---	---	7.3	7.3	7.3
4	7.2	7.2	7.2				---	---	---	7.3	7.3	7.3
5	7.3	7.2	7.2				---	---	---	7.3	7.3	7.3
6	7.3	7.2	7.2				---	---	---	7.3	7.3	7.3
7	7.3	7.2	7.2				---	---	---	7.3	7.2	7.3
8	7.3	7.2	7.2				---	---	---	7.3	7.2	7.2
9	7.3	7.2	7.2				---	---	---	7.3	7.3	7.3
10	7.4	7.2	7.3				---	---	---	7.3	7.3	7.3
11	7.4	7.2	7.3				---	---	---	7.3	7.3	7.3
12	7.3	7.2	7.2				---	---	---	7.3	7.3	7.3
13	7.3	7.1	7.2				7.4	7.2	7.3	7.3	7.2	7.3
14	7.4	7.2	7.3				7.3	7.2	7.2	---	---	---
15	7.4	7.2	7.3				7.3	7.2	7.2	7.3	7.3	7.3
16	7.4	7.2	7.3				7.3	7.2	7.2	7.4	7.3	7.3
17	7.4	7.2	7.3				7.3	7.2	7.2	7.3	7.3	7.3
18	7.3	7.2	7.2				7.3	7.2	7.2	---	---	---
19	---	---	---				7.3	7.2	7.3	---	---	---
20	---	---	---				7.4	7.2	7.3	---	---	---
21	---	---	---				7.3	7.2	7.3	---	---	---
22	---	---	---				7.3	7.2	7.3	---	---	---
23	---	---	---				7.3	7.2	7.3	---	---	---
24	---	---	---				7.3	7.2	7.3	---	---	---
25	---	---	---				7.2	7.2	7.2	---	---	---
26	---	---	---				7.3	7.2	7.3	---	---	---
27	---	---	---				7.3	7.3	7.3	---	---	---
28	---	---	---				7.4	7.3	7.3	---	---	---
29	---	---	---				7.3	7.3	7.3	---	---	---
30	---	---	---				7.3	7.3	7.3	---	---	---
31	---	---	---				7.3	7.3	7.3	---	---	---
MONTH	7.4	7.1	7.2				7.4	7.2	7.3	7.4	7.2	7.3

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

PH (UNITS), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	7.3	7.2	7.2	7.5	7.4	7.4	7.4	7.4	7.4
2	---	---	---	7.2	7.2	7.2	7.5	7.3	7.4	7.4	7.3	7.4
3	---	---	---	7.3	7.2	7.2	7.5	7.3	7.4	7.3	7.3	7.3
4	---	---	---	7.3	7.2	7.3	7.5	7.3	7.4	7.3	7.3	7.3
5	---	---	---	7.3	7.2	7.3	7.5	7.3	7.4	7.4	7.3	7.4
6	---	---	---	7.3	7.2	7.3	7.5	7.3	7.4	7.4	7.3	7.4
7	---	---	---	7.3	7.2	7.3	7.5	7.3	7.4	7.4	7.3	7.4
8	---	---	---	7.3	7.2	7.3	7.5	7.3	7.4	7.5	7.3	7.4
9	---	---	---	7.4	7.2	7.3	7.6	7.3	7.4	7.3	7.3	7.3
10	---	---	---	7.3	7.2	7.3	7.5	7.3	7.4	7.3	7.2	7.3
11	---	---	---	7.3	7.2	7.2	7.5	7.3	7.4	7.4	7.3	7.3
12	---	---	---	7.2	7.1	7.2	7.5	7.3	7.4	7.5	7.3	7.4
13	---	---	---	7.3	7.2	7.2	7.5	7.3	7.4	7.5	7.3	7.4
14	---	---	---	7.3	7.2	7.3	7.4	7.3	7.4	7.5	7.3	7.4
15	---	---	---	7.4	7.2	7.3	7.4	7.3	7.3	7.5	7.3	7.4
16	---	---	---	7.4	7.2	7.3	7.5	7.3	7.4	7.5	7.3	7.4
17	---	---	---	7.4	7.2	7.3	7.4	7.3	7.4	7.5	7.2	7.4
18	---	---	---	7.4	7.3	7.3	7.4	7.3	7.4	7.5	7.3	7.4
19	---	---	---	7.3	7.2	7.3	7.4	7.3	7.3	7.5	7.3	7.4
20	---	---	---	7.3	7.2	7.3	7.5	7.3	7.4	7.4	7.3	7.4
21	---	---	---	7.4	7.3	7.3	7.5	7.3	7.4	7.5	7.3	7.4
22	---	---	---	7.4	7.3	7.3	7.4	7.3	7.3	7.5	7.3	7.4
23	---	---	---	7.4	7.2	7.3	7.4	7.3	7.3	7.5	7.2	7.3
24	---	---	---	7.4	7.3	7.4	7.4	7.3	7.3	7.5	7.3	7.4
25	---	---	---	7.4	7.3	7.4	7.5	7.3	7.4	7.5	7.3	7.4
26	7.3	7.3	7.3	7.5	7.3	7.4	7.5	7.4	7.4	7.5	7.4	7.5
27	7.3	7.2	7.3	7.5	7.3	7.4	7.4	7.3	7.3	7.5	7.4	7.5
28	7.3	7.2	7.3	7.4	7.3	7.4	7.5	7.2	7.4	7.5	7.4	7.4
29	7.3	7.2	7.3	7.5	7.3	7.4	7.5	7.3	7.4	7.5	7.3	7.4
30	7.2	7.2	7.2	7.5	7.3	7.4	7.4	7.3	7.4	7.4	7.3	7.3
31	---	---	---	7.5	7.3	7.4	7.4	7.3	7.3	---	---	---
MONTH	7.3	7.2	7.3	7.5	7.1	7.3	7.6	7.2	7.4	7.5	7.2	7.4
YEAR	7.6	7.1	7.3									

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.5	11.0	11.5				---	---	---	2.0	1.0	1.5
2	12.5	11.0	11.5				---	---	---	3.0	2.0	2.5
3	12.0	11.0	11.5				---	---	---	3.0	2.5	2.5
4	12.0	10.5	11.5				---	---	---	2.5	2.0	2.5
5	11.5	10.5	11.5				---	---	---	2.5	2.0	2.0
6	11.5	10.0	11.0				---	---	---	2.5	2.0	2.0
7	11.0	10.0	10.5				---	---	---	2.0	2.0	2.0
8	11.5	10.0	10.5				---	---	---	2.0	1.5	2.0
9	11.0	10.0	10.5				---	---	---	3.0	2.0	2.5
10	11.0	10.0	10.5				---	---	---	3.0	3.0	3.0
11	11.0	10.5	10.5				---	---	---	3.5	3.0	3.5
12	11.0	10.0	10.5				---	---	---	4.0	3.5	3.5
13	11.0	10.0	10.5				4.5	4.0	4.5	4.0	4.0	4.0
14	11.0	9.5	10.0				5.0	4.5	5.0	---	---	---
15	11.0	9.5	10.5				5.0	4.5	4.5	3.5	3.0	3.0
16	11.0	10.0	10.5				5.0	4.5	5.0	3.0	3.0	3.0
17	11.5	10.5	11.0				5.0	4.5	5.0	3.0	2.5	3.0
18	11.5	11.0	11.5				5.5	4.5	5.0	---	---	---
19	---	---	---				5.0	4.5	5.0	---	---	---
20	---	---	---				5.0	4.5	5.0	---	---	---
21	---	---	---				5.0	5.0	5.0	---	---	---
22	---	---	---				5.5	5.0	5.0	---	---	---
23	---	---	---				5.0	5.0	5.0	---	---	---
24	---	---	---				5.0	4.0	4.5	---	---	---
25	---	---	---				4.5	4.0	4.0	---	---	---
26	---	---	---				4.0	3.5	4.0	---	---	---
27	---	---	---				4.0	3.0	3.5	---	---	---
28	---	---	---				3.0	2.0	2.5	---	---	---
29	---	---	---				2.0	1.0	1.5	---	---	---
30	---	---	---				1.5	1.0	1.5	---	---	---
31	---	---	---				1.5	1.0	1.0	---	---	---
MONTH	12.5	9.5	11.0				5.5	1.0	4.0	4.0	1.0	2.5

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	11.5	11.0	11.5	16.5	15.5	16.0	15.0	14.0	14.5
2	---	---	---	11.5	11.0	11.0	17.0	14.0	15.5	14.5	13.5	14.0
3	---	---	---	12.5	11.0	11.5	16.0	14.5	15.5	13.5	13.0	13.5
4	---	---	---	14.0	11.0	12.5	17.0	14.0	15.5	13.5	12.5	13.0
5	---	---	---	14.0	13.0	13.5	17.0	14.0	15.5	13.0	12.5	12.5
6	---	---	---	14.5	12.0	13.5	16.5	14.0	15.0	14.0	12.5	13.0
7	---	---	---	14.5	13.0	14.0	16.5	14.0	15.0	14.5	13.0	14.0
8	---	---	---	14.0	13.0	13.5	17.0	14.0	15.5	14.0	13.5	14.0
9	---	---	---	14.5	13.0	13.5	17.5	14.0	15.5	14.0	13.5	13.5
10	---	---	---	14.0	13.0	13.5	17.5	14.5	16.0	14.5	12.5	13.5
11	---	---	---	13.0	10.5	12.0	17.5	14.5	16.0	14.0	12.5	13.5
12	---	---	---	11.5	11.0	11.5	17.5	14.5	16.0	14.5	13.0	13.5
13	---	---	---	14.0	12.0	13.0	17.5	14.5	16.0	14.5	13.0	14.0
14	---	---	---	15.0	13.5	14.0	15.5	14.0	15.0	15.0	13.0	14.0
15	---	---	---	16.0	13.5	14.5	14.0	13.5	14.0	15.0	13.5	14.5
16	---	---	---	17.0	13.5	15.0	15.5	13.5	14.5	15.5	13.5	14.5
17	---	---	---	16.5	14.0	15.0	15.5	14.0	15.0	15.5	13.5	14.5
18	---	---	---	16.0	14.0	15.0	14.0	13.0	13.5	15.0	13.5	14.0
19	---	---	---	16.0	14.5	15.0	14.5	13.5	14.0	14.0	13.0	13.5
20	---	---	---	16.0	14.5	15.0	15.5	13.5	14.5	14.0	13.5	13.5
21	---	---	---	17.0	15.0	15.5	16.5	14.5	15.0	14.0	13.5	13.5
22	---	---	---	16.0	15.0	15.5	15.0	14.0	14.5	14.0	13.0	13.5
23	---	---	---	16.0	14.5	15.0	16.0	14.5	15.0	15.0	13.0	14.0
24	---	---	---	16.0	14.5	15.5	16.5	14.5	15.5	14.5	13.0	14.0
25	---	---	---	16.0	14.0	15.0	16.0	14.5	15.0	14.5	12.5	13.5
26	14.5	13.0	14.0	16.5	14.5	15.0	16.5	14.5	15.5	14.0	13.0	13.5
27	15.0	13.0	13.5	16.5	14.5	15.0	15.5	14.5	15.0	14.0	12.5	13.0
28	14.5	13.0	13.5	15.0	14.0	14.5	15.0	14.0	14.5	14.0	11.5	12.5
29	14.5	13.0	13.5	15.5	13.0	14.0	14.5	14.0	14.5	13.0	12.0	13.0
30	13.5	11.5	12.5	16.5	13.5	15.0	14.5	13.5	14.0	13.5	11.5	12.5
31	---	---	---	18.0	14.5	16.0	14.5	13.0	13.5	---	---	---
MONTH	15.0	11.5	13.5	18.0	10.5	14.0	17.5	13.0	15.0	15.5	11.5	13.5

DISSOLVED OXYGEN (DO), MG/L, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.0	9.9	9.9				---	---	---	12.9	12.6	12.7
2	10.0	9.9	10.0				---	---	---	12.5	12.2	12.4
3	10.2	10.0	10.1				---	---	---	12.2	12.0	12.1
4	10.3	10.0	10.1				---	---	---	12.1	12.0	12.0
5	10.2	10.0	10.1				---	---	---	12.0	11.9	12.0
6	10.1	9.9	10.0				---	---	---	11.9	11.7	11.8
7	10.0	9.7	9.8				---	---	---	11.8	11.6	11.7
8	10.0	9.5	9.7				---	---	---	11.8	11.5	11.7
9	10.0	9.5	9.8				---	---	---	11.9	11.4	11.6
10	10.6	9.7	10.0				---	---	---	12.0	11.7	11.8
11	10.7	10.4	10.5				---	---	---	11.7	11.5	11.6
12	10.7	10.2	10.4				---	---	---	11.6	11.4	11.5
13	11.0	10.3	10.6				13.2	10.1	11.6	11.7	11.5	11.6
14	11.1	10.5	10.8				12.5	12.3	12.4	---	---	---
15	10.9	10.5	10.7				12.6	12.1	12.3	12.2	11.8	12.1
16	10.7	10.3	10.5				12.3	11.9	12.1	12.2	12.1	12.2
17	10.7	10.3	10.5				11.9	11.7	11.8	12.1	12.0	12.1
18	10.7	10.4	10.5				12.7	11.7	12.2	---	---	---
19	---	---	---				12.8	12.4	12.5	---	---	---
20	---	---	---				12.5	12.4	12.4	---	---	---
21	---	---	---				12.4	12.2	12.3	---	---	---
22	---	---	---				12.2	12.1	12.1	---	---	---
23	---	---	---				12.2	12.0	12.1	---	---	---
24	---	---	---				12.3	12.1	12.3	---	---	---
25	---	---	---				12.4	12.4	12.4	---	---	---
26	---	---	---				12.4	12.3	12.4	---	---	---
27	---	---	---				12.3	12.1	12.2	---	---	---
28	---	---	---				12.7	12.3	12.5	---	---	---
29	---	---	---				13.0	12.7	12.8	---	---	---
30	---	---	---				13.0	12.8	12.9	---	---	---
31	---	---	---				13.0	12.8	12.9	---	---	---
MONTH	11.1	9.5	10.2				13.2	10.1	12.3	12.9	11.4	11.9

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

DISSOLVED OXYGEN (DO), MG/L, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	11.1	10.8	11.0	10.5	9.9	10.2	10.0	9.7	9.8
2	---	---	---	11.0	10.8	10.9	10.9	10.4	10.6	10.0	9.7	9.9
3	---	---	---	10.9	10.7	10.8	10.7	10.2	10.4	10.0	9.1	9.8
4	---	---	---	10.9	10.3	10.6	10.6	10.0	10.3	10.1	9.9	10.0
5	---	---	---	10.4	9.9	10.1	10.4	9.9	10.2	10.3	9.9	10.1
6	---	---	---	10.3	9.9	10.2	10.4	10.0	10.2	10.2	9.8	10.1
7	---	---	---	10.1	9.8	9.9	10.2	9.7	10.0	10.0	9.6	9.8
8	---	---	---	10.3	9.8	10.0	10.1	9.5	9.8	10.1	9.7	9.9
9	---	---	---	10.5	10.0	10.3	9.8	9.3	9.6	10.5	10.0	10.3
10	---	---	---	10.6	10.3	10.4	9.6	9.0	9.3	10.6	10.4	10.5
11	---	---	---	11.0	10.4	10.6	9.7	9.3	9.5	10.6	10.3	10.4
12	---	---	---	11.0	9.6	10.7	9.7	8.9	9.4	10.4	10.1	10.3
13	---	---	---	10.3	10.0	10.1	9.9	9.2	9.5	10.6	10.2	10.4
14	---	---	---	10.1	9.8	9.9	10.0	9.5	9.7	10.5	10.3	10.4
15	---	---	---	10.3	9.7	9.9	10.2	9.8	10.0	10.4	10.1	10.3
16	---	---	---	10.2	9.6	9.9	10.3	9.8	10.0	10.5	9.9	10.1
17	---	---	---	10.2	9.6	9.9	10.2	9.6	9.9	10.3	9.9	10.1
18	---	---	---	10.0	9.8	9.9	10.4	10.1	10.3	10.0	9.4	9.6
19	---	---	---	9.8	9.5	9.6	10.6	9.9	10.4	10.5	9.6	10.0
20	---	---	---	9.8	9.5	9.6	10.4	10.0	10.2	10.2	9.7	9.9
21	---	---	---	9.5	9.3	9.4	10.5	9.9	10.2	10.3	9.5	9.9
22	---	---	---	9.5	9.2	9.3	10.7	10.4	10.5	10.1	9.7	9.9
23	---	---	---	9.9	9.6	9.7	10.3	9.6	10.0	10.1	9.2	9.6
24	---	---	---	10.1	9.6	9.9	9.7	9.5	9.6	9.5	9.1	9.3
25	---	---	---	10.2	10.0	10.1	9.8	9.0	9.4	10.5	9.2	9.9
26	11.2	10.8	11.0	10.3	9.9	10.1	9.6	9.0	9.2	10.4	10.0	10.2
27	11.1	10.6	10.8	10.4	10.1	10.2	10.4	10.0	10.2	10.4	10.0	10.2
28	11.1	10.4	10.8	10.3	9.8	10.1	10.5	10.2	10.3	10.5	9.9	10.3
29	10.9	10.4	10.7	10.5	10.2	10.4	10.5	10.0	10.2	10.3	9.9	10.1
30	10.8	10.3	10.5	10.4	10.0	10.2	10.3	9.9	10.1	10.4	9.9	10.1
31	---	---	---	10.5	9.7	10.0	10.2	10.0	10.1	---	---	---
MONTH	11.2	10.3	10.8	11.1	9.2	10.1	10.9	8.9	10.0	10.6	9.1	10.0

(Observations by observer)

Date	Time	Specific conductance (micro-mhos)	Ph (units)	Dissolved oxygen (mg/1)	Temperature (Deg. C°)
Oct. 24, 1978	1800	53.9	7.4	12.3	9.8
27	1500	53.5	7.3	11.4	9.0
31	1300	46.2	7.4	11.3	7.7
Nov. 3	1600	47.8	7.2	11.2	---
7	1300	46.2	7.2	11.4	---
10	1200	41.2	7.3	12.1	---
14	1400	42.3	7.3	11.7	---
17	1500	44.6	7.5	11.5	---
20	1200	41.2	7.3	11.3	---
24	1600	39.3	7.0	11.4	---
28	1500	38.3	7.1	11.5	---
Dec. 1	1500	38.2	7.2	11.4	---
6	1500	37.4	7.2	11.6	---
10	1200	38.2	7.0	11.7	---
13	0900	33.3	7.4	12.4	---
18	1100	46.2	7.2	11.7	5.1
22	1400	51.3	7.3	12.1	5.2
26	1300	42.8	7.3	12.2	4.1
31	1000	37.5	7.3	12.7	---
Jan. 4, 1979	1700	39.4	7.3	12.0	---
8	1200	44.7	7.2	11.7	---
11	1600	47.3	7.3	11.6	3.4
15	1000	47.5	7.3	11.9	3.8
Feb. 2	1400	41.1	7.1	12.2	---
7	1500	39.6	7.2	12.0	---
11	1700	41.3	7.2	11.8	4.1
19	1200	44.8	7.2	11.9	3.9
May 20	1530	42.5	7.3	12.0	11.4
24	1100	37.0	7.2	11.4	9.4
28	1500	39.0	7.2	11.8	8.3
June 1	1600	46.5	7.3	11.3	---
5	1300	37.5	7.1	10.6	10.4
8	1600	48.0	7.1	10.0	12.1
12	1400	36.5	7.0	10.6	11.7
15	1200	44.0	7.2	11.3	10.9
19	1500	48.5	7.3	10.5	10.4
23	1400	49.0	7.3	10.1	13.4

12199000 SKAGIT RIVER NEAR SEDRO WOOLLEY, WA--Continued

(Daily random instantaneous water-quality monitor readings)

Date	Specific conductance (micromhos)	pH (units)	Dissolved oxygen (mg/l)	Temperature (Deg C°)
Mar. 1979				
27	----	----	12.3	----
28	62	7.3	12.4	6.3
29	62	7.3	12.1	6.1
30	65	7.3	12.3	5.9
31	70	7.3	11.7	6.7
Apr.				
1	71	7.4	11.8	6.7
2	62	7.3	12.7	5.9
3	63	7.3	12.8	5.9
4	60	7.3	12.6	5.3
5	62	7.3	12.2	6.1
6	60	7.3	11.4	7.2
9	59	7.2	12.6	6.3
10	57	7.2	12.4	6.9
11	58	7.2	12.2	7.2
12	56	7.2	12.8	6.1
13	53	7.2	12.3	5.9
14	55	7.2	12.1	5.9
15	55	7.2	11.8	6.3
16	59	7.2	11.4	6.7
17	59	7.2	11.1	6.9
18	60	7.2	10.8	6.9
19	62	7.2	10.2	7.6
20	60	7.3	10.8	----
21	63	7.2	10.3	----
22	69	7.3	9.8	----
23	67	7.3	----	----
24	67	7.2	----	----
25	63	7.4	9.4	----
26	59	7.3	9.3	----
27	56	7.3	9.2	----
28	50	7.2	8.9	----
29	45	7.2	9.2	----
30	39	7.2	9.8	----
May				
1	40	7.3	9.9	8.8
2	38	7.2	10.2	8.2
3	42	7.2	----	9.0
12	53	7.0	9.3	10.2
13	55	7.2	9.8	9.6
14	50	7.4	9.6	10.8
15	48	7.2	9.9	11.0
16	51	7.1	9.8	10.6
17	44	7.1	9.7	9.6
18	43	7.2	10.9	9.6
19	41	7.3	11.4	10.0
20	42	7.2	12.0	11.4
21	45	7.3	12.2	10.6
22	36	7.2	12.3	11.0
23	34	7.3	11.5	10.6
24	37	7.2	11.4	9.4
25	37	7.2	11.4	9.4
26	39	7.3	11.1	10.2
27	36	7.1	11.5	8.0
28	39	7.2	11.8	8.3
29	44	7.2	11.2	8.8
30	48	7.2	11.1	10.6
31	50	7.3	11.0	11.8
June				
1	46	7.3	11.3	----
2	39	7.3	10.8	12.0
3	34	7.2	10.6	12.0
4	31	7.2	10.0	11.0
5	38	7.1	10.6	10.4
6	39	7.2	10.7	9.0
7	40	7.2	10.7	9.4
8	48	7.1	10.0	12.1
9	46	7.1	10.3	12.4
11	40	7.1	10.7	12.2
12	36	7.0	10.6	11.7
13	37	7.0	10.4	11.6
14	38	7.1	10.7	10.8
15	44	7.2	11.3	10.9
16	47	7.2	11.1	10.8
17	51	7.2	10.9	10.0
18	50	7.2	11.1	10.0
19	48	7.3	10.5	10.4
20	46	7.3	10.4	10.2
21	46	7.3	10.2	11.4
22	47	7.3	10.2	12.6
23	49	7.3	10.1	13.4
24	47	7.3	9.8	13.5
25	44	7.3	10.2	13.1
26	40	7.3	----	13.3

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 48°26'42", long 122°20'03", in SE¼SE¼ sec.7, T.34 N., R.4 E., Skagit County, Hydrologic Unit 17110007, on draw rest of and 150 ft (46 m) downstream from bridge on former U.S. Highway 99, 1.5 mi (2.4 km) north of Skagit Valley Junior College in Mount Vernon, and at mile 15.7 (25.3 km).

DRAINAGE AREA.--3,093 mi² (8,011 km²), of which 400 mi² (1,036 km²) is in Canada.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1940 to current year. Monthly discharge only October 1940, published in WSP 1316.

REVISED RECORDS.--WSP 1932: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is National Geodetic Vertical Datum of 1929. Supplementary water-stage recorder in bridge pier 0.2 mi (0.3 km) downstream from base gage Dec. 3, 1957, to Oct. 15, 1964.

REMARKS.--Water-discharge records good. Flow regulated for powerplants on Baker and upper Skagit Rivers by Ross Reservoir (see sta 12175000) and by Diablo and Gorge Reservoirs, Baker Lake and Lake Shannon (see stations 12176500, 12177700, 12191600, 12193000). Small diversions for domestic and municipal use.

AVERAGE DISCHARGE.--39 years, 16,710 ft³/s (473.2 m³/s), 12,110,000 acre-ft (14,900 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 144,000 ft³/s (4,080 m³/s) Feb. 11, 1951, elevation, 36.85 ft (11.232 m); minimum, 2,740 ft³/s (77.6 m³/s) Oct. 26, 1942, elevation, 7.37 ft (2.246 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1906 reached a stage of 37 ft (11.3 m), from Great Northern Railway high-water profile, discharge 180,000 ft³/s (5,100 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50,000 ft³/s (1,420 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 8	1330	*40,300	1,140	*21.80	6.645

Minimum discharge, 4,580 ft³/s (130 m³/s) Sept. 24, gage height, 8.59 ft (2.618 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13700	7580	12800	12200	11800	11000	7870	20200	14800	18300	9580	8340
2	11000	9300	11600	12100	10900	9450	9720	19100	19100	17100	10600	10600
3	11500	11800	11500	13600	11300	8400	9990	16800	21200	14300	10300	12500
4	11400	26200	14000	14700	8340	9960	10200	17500	20300	13200	9100	13200
5	10300	23200	15700	14200	8970	23900	12000	21600	23400	13400	8850	10900
6	8840	16200	15100	12700	10500	29000	12100	21000	25600	14300	9330	11700
7	7410	17800	13500	10100	14800	33600	11900	18300	20800	12700	9150	10900
8	6480	34900	13400	8350	11800	28200	11800	15800	17600	11900	8830	10200
9	5990	27000	11600	11000	10700	22200	12400	13800	15900	14300	8800	12500
10	6990	21700	10200	12300	11600	17000	12500	13100	16300	16200	8620	12500
11	9980	19600	13200	12700	11900	14300	12200	11800	19700	18900	8070	11100
12	9270	18400	15600	12600	15000	15000	12000	11600	22000	16200	7740	9630
13	8380	17600	15200	12300	18500	15600	13700	13200	20600	15300	8550	9240
14	7420	15700	14500	10200	20700	15300	15600	13800	18600	13200	9150	8730
15	6140	14000	13100	10400	16600	15000	13900	15200	15800	12400	10100	8090
16	5630	14400	13800	11500	15100	16800	12400	16400	14400	13200	9400	7150
17	6640	16600	10600	11800	13000	15500	12100	17500	13400	16300	10100	6710
18	6570	16000	11500	10900	14000	13700	12200	16300	14500	17300	10700	8480
19	6380	15000	10900	9620	12900	14300	11800	15000	14600	17900	8430	8140
20	6470	15000	11600	7850	12500	13100	11600	13900	15000	15800	5960	7170
21	8790	15000	10900	7570	12000	12600	10200	14800	13400	15700	7420	9490
22	6630	15000	9830	7870	9620	12800	8450	18400	13200	14100	11100	9080
23	6700	13500	9610	8930	9100	12500	8510	21800	12600	13000	10200	6530
24	8080	11800	11400	8390	9240	10900	9030	22200	13100	14200	8230	5190
25	10300	10600	10300	9270	10500	12500	10200	21800	14700	13300	9770	7540
26	8230	10900	9470	12100	13500	12800	10700	22000	15900	13400	8640	6140
27	8470	11700	9590	12500	13200	10100	11800	22200	16400	12400	9060	6270
28	6970	13100	11400	12200	12200	10600	14600	19600	17500	11700	10400	8160
29	7170	11300	12600	12100	---	11500	16800	17400	17800	10600	10200	7840
30	6380	11200	12700	12300	---	11200	18700	16200	17100	10300	9700	6590
31	7330	---	12900	11700	---	8480	---	14500	---	9400	7650	---
TOTAL	251540	482080	380100	346050	350270	467290	356970	532800	515300	440300	283730	270610
MEAN	8114	16070	12260	11160	12510	15070	11900	17190	17180	14200	9153	9020
MAX	13700	34900	15700	14700	20700	33600	18700	22200	25600	18900	11100	13200
MIN	5630	7580	9470	7570	8340	8400	7870	11600	12600	9400	5960	5190
AC-FT	498900	956200	753900	686400	694800	926900	708000	1057000	1022000	873300	562800	536800

CAL YR 1978 TOTAL 5159100 MEAN 14130 MAX 34900 MIN 5630 AC-FT 10230000
WTR YR 1979 TOTAL 4677040 MEAN 12810 MAX 34900 MIN 5190 AC-FT 9277000

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-70, 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: February 1974 to current year.
WATER TEMPERATURE: July 1962 to August 1970, February 1974 to current year.

INSTRUMENTATION.--Water-quality monitor since February 1974.

REMARKS.--Interruptions in the record were due to malfunctions of the instruments. In addition to the water-quality monitor record, samples were collected approximately once a month. Temperature records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 95 micromhos observed Mar. 15, 1978; minimum, 25 micromhos July 7, 1975.
WATER TEMPERATURES: Maximum, 19.0°C Aug. 12, 1977; minimum, 1.0°C Jan. 28 to Feb. 1, 1969.

EXTREMES OUTSIDE PERIOD OF DAILY RECORD.--A water temperature of 17.8°C was observed on Aug. 3, 1961.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 76 micromhos Jan. 20, Feb. 5; minimum, 27 micromhos Nov. 8, June 4.
WATER TEMPERATURES; Maximum, 17.5°C July 31; minimum recorded, 1.5°C Dec. 29, Jan. 31 to Feb. 3.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
OCT , 1978											
24...	1000	7240	54	8.3	9.6	2.4	10.5	K40	K150	25	2
NOV											
08...	1015	38600	30	--	8.4	35	11.2	K37	78	16	3
DEC											
15...	0955	13400	56	7.7	5.1	1.8	12.0	K90	K1100	27	6
JAN , 1979											
23...	1145	8940	67	--	3.6	1.5	12.7	32	330	29	5
FEB											
21...	1055	12000	69	8.1	4.2	7.1	12.1	--	54	31	8
MAR											
20...	1225	13100	61	7.1	6.8	3.5	11.7	17	K80	27	5
MAY											
08...	1030	15800	44	--	9.2	2.3	11.2	7	13	19	3
30...	1030	14900	45	6.4	10.0	3.2	11.2	K55	11	20	4
JUN											
26...	1040	15600	38	7.1	13.0	4.0	10.3	9	2	17	6
JUL											
25...	1200	12200	46	7.3	14.2	2.1	10.0	10	22	19	0
AUG											
21...	1050	6760	51	6.8	14.8	.80	9.7	K20	8	20	4
SEP											
25...	1125	8160	49	7.6	13.0	.80	10.1	56	30	22	5

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)
OCT , 1978											
24...	7.6	1.5	1.5	11	.1	.6	23	5.8	1.3	.1	7.0
NOV											
08...	5.0	.9	.9	11	.1	.4	13	4.0	.7	.0	4.9
DEC											
15...	8.2	1.6	1.5	10	.1	.8	21	5.0	1.0	.0	7.2
JAN , 1979											
23...	8.7	1.7	1.6	11	.1	.4	24	2.8	1.2	.0	7.5
FEB											
21...	9.3	1.9	1.9	12	.1	.5	23	6.3	2.2	.0	8.4
MAR											
20...	8.2	1.6	1.6	11	.1	.6	22	7.5	1.1	.0	8.7
MAY											
08...	5.8	1.2	1.1	11	.1	.7	16	3.8	1.0	.0	6.5
30...	6.0	1.3	.9	9	.1	.6	16	3.3	.9	.1	5.9
JUN											
26...	5.0	1.0	1.0	11	.1	.5	11	7.1	.8	.0	6.2
JUL											
25...	5.8	1.1	1.7	20	.2	.4	20	5.2	.7	.1	6.0
AUG											
21...	6.1	1.1	1.5	14	.1	.8	16	7.1	1.0	.1	--
SEP											
25...	6.9	1.2	1.4	12	.1	.7	17	11	.6	.1	6.6

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER QUALITY DATA

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)
OCT , 1978											
24...	36	39	.05	704	19	.06	.01	.95	.96	.69	.27
NOV											
08...	28	25	.04	2920	321	.14	.02	.15	.17	.02	.15
DEC											
15...	40	38	.05	1450	21	.21	.02	.08	.10	.00	.13
JAN , 1979											
23...	44	38	.06	1060	7	.19	.00	.13	.13	.08	.05
FEB											
21...	47	44	.06	1520	16	.33	.03	.08	.11	.03	.08
MAR											
20...	48	40	.05	1420	4	.21	.03	.11	.14	.10	.04
MAY											
08...	35	30	.05	1490	--	.12	.00	.20	.20	.18	.02
30...	32	29	.04	1290	--	.11	.03	.01	.04	.00	.07
JUN											
26...	25	28	.03	1050	7	.09	.01	.17	.18	.00	.19
JUL											
25...	23	33	.03	758	0	.05	.01	.13	.14	.04	.10
AUG											
21...	37	--	.05	675	6	.10	.00	.27	.27	.17	.10
SEP											
25...	37	39	.05	815	2	.06	.09	.43	.52	.18	.34

DATE	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1978										
24...	1.0	4.5	.010	.000	--	1.8	.3	65	1270	19
NOV										
08...	.31	1.4	.250	.010	6.1	--	--	661	68900	54
DEC										
15...	.31	1.4	.000	.010	1.2	--	--	62	2240	0
JAN , 1979										
23...	.32	1.4	.050	.020	--	2.0	.8	23	555	26
FEB										
21...	.44	1.9	.030	.020	1.1	--	--	37	1200	25
MAR										
20...	.35	1.6	.020	.020	1.3	--	--	163	5770	4
MAY										
08...	.32	1.4	.010	.010	--	2.3	.0	6	256	78
30...	.15	.66	.020	.020	1.4	--	--	51	2050	13
JUN										
26...	.27	1.2	.010	.000	5.0	--	--	61	2570	10
JUL										
25...	.19	.84	.010	.020	--	1.2	.0	8	264	90
AUG										
21...	.37	1.6	.000	.000	1.2	--	--	18	329	28
SEP										
25...	.58	2.6	.000	.000	.8	--	--	87	1920	14

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, SUS- PENDED RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM SUS- PENDED RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
OCT , 1978										
24...	1000	1	1	0	0	18	2	1	<1	0
JAN , 1979										
23...	1145	1	1	0	0	8	1	0	2	10
MAY										
08...	1030	1	1	200	200	10	1	0	<1	0
JUL										
25...	1200	1	1	0	0	10	0	0	<1	0

DATE	CHRO- MIUM, SUS- PENDED RECOV. (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, SUS- PENDED RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, SUS- PENDED RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, SUS- PENDED RECOV- ERABLE (UG/L AS FE)
OCT , 1978										
24...	0	0	2	0	2	4	1	3	550	490
JAN , 1979										
23...	0	10	2	0	<3	4	0	5	390	330
MAY										
08...	0	0	0	0	<3	0	0	0	350	310
JUL										
25...	0	0	0	0	<3	2	1	1	190	120

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

WATER QUALITY DATA

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)
OCT , 1978										
24...	60	17	14	3	10	0	10	.0	.0	.0
JAN , 1979										
23...	60	8	5	3	10	2	8	.0	.0	.0
MAY										
08...	40	18	18	0	20	10	10	.3	.3	.0
JUL										
25...	70	5	5	0	20	10	10	.6	.6	.0

DATE	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT , 1978									
24...	0	0	0	0	0	0	10	3	7
JAN , 1979									
23...	0	0	0	0	0	0	10	5	5
MAY									
08...	0	0	0	0	0	0	10	4	6
JUL									
25...	0	0	0	0	0	0	10	6	4

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	55	50	52	60	57	59	53	51	52	64	61	63
2	54	51	53	60	55	57	56	52	54	67	62	64
3	54	50	52	56	53	54	56	50	54	64	62	63
4	54	51	53	54	29	40	53	48	50	64	62	63
5	57	53	54	47	36	42	50	49	49	64	63	63
6	60	55	57	50	47	49	52	50	51	67	63	65
7	61	57	59	50	46	49	56	52	54	69	65	67
8	63	60	61	44	27	33	55	52	53	70	66	68
9	64	61	63	45	33	39	57	53	55	66	64	65
10	62	58	59	50	44	47	58	53	55	66	63	65
11	57	50	52	52	49	51	58	46	50	66	65	65
12	54	50	52	54	52	53	49	45	46	66	65	65
13	56	52	54	54	52	53	50	48	49	70	66	67
14	59	54	57	55	52	53	53	50	51	74	68	71
15	63	59	61	56	53	54	56	52	53	74	67	70
16	65	60	63	54	52	52	54	50	52	72	67	68
17	64	59	61	52	49	50	60	53	56	71	67	68
18	62	59	60	52	48	50	61	52	55	71	66	69
19	63	59	61	53	50	51	60	54	57	75	66	70
20	64	58	61	54	51	53	59	55	56	76	71	74
21	60	55	57	54	52	53	60	54	57	72	67	70
22	62	55	59	54	52	53	61	57	60	71	65	68
23	60	57	58	55	53	54	61	58	60	72	63	67
24	58	53	57	56	53	55	61	51	55	72	67	70
25	52	48	50	56	54	56	58	52	54	69	66	67
26	56	52	55	56	53	54	60	57	59	66	65	65
27	62	53	56	55	52	53	64	60	61	67	66	66
28	62	59	60	55	52	53	65	58	61	68	66	67
29	61	56	58	56	54	55	61	59	60	68	66	67
30	62	59	61	56	52	54	63	61	62	68	66	67
31	61	56	59	---	---	---	64	61	62	68	66	67
MONTH	65	48	57	60	27	51	65	45	55	76	61	67

SKAGIT RIVER BASIN

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	68	66	67	70	65	67	68	66	67	43	39	41
2	69	67	68	71	69	70	68	63	65	42	39	41
3	69	66	68	73	70	72	66	64	65	43	40	41
4	75	68	71	73	58	67	65	63	64	42	36	40
5	76	65	69	58	38	45	63	60	61	36	32	33
6	70	65	67	39	34	38	62	61	61	38	35	37
7	63	61	62	37	34	35	62	61	61	43	39	41
8	68	62	65	46	36	41	62	61	62	46	42	44
9	68	60	65	52	46	49	61	60	60	48	46	47
10	60	57	59	55	53	54	61	59	60	50	47	49
11	63	58	61	57	55	56	61	60	61	52	50	51
12	60	55	58	58	55	56	63	61	62	53	50	52
13	55	51	53	58	56	57	62	55	59	53	49	51
14	59	52	55	59	58	58	56	54	55	51	45	49
15	64	59	62	60	54	58	60	56	58	47	43	46
16	67	64	65	56	55	55	62	60	61	47	40	43
17	68	66	67	58	56	56	63	61	62	42	38	40
18	67	63	65	60	58	59	62	61	62	44	41	42
19	68	65	66	62	60	60	63	62	62	46	42	43
20	69	66	67	63	61	61	64	62	62	48	42	44
21	70	68	69	62	61	62	68	63	64	46	42	43
22	73	70	72	63	60	61	67	66	67	46	36	40
23	74	70	72	62	60	61	68	65	66	40	33	37
24	73	70	72	63	59	61	65	62	63	36	32	34
25	73	63	67	62	58	59	62	57	60	36	33	35
26	63	55	57	60	58	59	59	55	57	38	31	35
27	61	56	58	63	60	62	57	50	53	34	31	32
28	66	61	63	64	60	62	50	42	46	42	35	37
29	---	---	---	63	61	62	43	41	42	46	42	44
30	---	---	---	64	62	63	41	40	41	48	46	47
31	---	---	---	67	64	66	---	---	---	49	46	48
MONTH	76	51	65	73	34	58	68	40	60	53	31	42

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	49	41	43	38	34	36	50	44	46	49	44	46
2	39	33	36	40	36	37	45	42	44	46	43	44
3	37	30	33	43	40	42	46	44	45	43	37	39
4	30	27	29	44	43	44	47	44	46	41	39	40
5	36	30	33	44	42	43	49	46	47	43	41	42
6	36	31	33	43	40	41	49	46	47	43	41	42
7	43	35	38	39	39	39	48	46	47	44	41	42
8	45	40	41	39	36	38	49	46	48	46	43	44
9	45	41	43	39	36	37	49	47	48	44	39	42
10	43	37	41	38	33	36	48	47	47	40	38	39
11	38	34	37	34	29	32	49	47	48	45	39	42
12	38	33	36	37	34	36	48	46	47	47	44	45
13	39	33	36	38	36	37	48	44	46	47	45	46
14	42	36	38	40	36	39	45	44	45	48	46	47
15	45	41	43	42	39	41	45	42	43	50	46	48
16	47	44	45	40	35	38	45	43	44	50	48	49
17	47	44	45	36	34	35	46	44	44	50	48	49
18	47	44	45	36	34	35	45	42	43	49	45	47
19	47	45	46	37	36	37	51	44	46	50	47	48
20	47	43	45	38	37	38	55	50	53	51	47	49
21	47	44	45	39	36	37	52	45	48	47	44	46
22	46	44	45	41	37	38	46	41	43	50	45	47
23	46	42	44	42	39	41	43	41	42	56	48	51
24	45	40	43	43	40	42	44	42	43	58	54	57
25	43	37	40	43	41	42	44	42	43	53	48	50
26	38	34	36	44	40	42	46	44	45	54	51	53
27	35	34	35	43	42	43	46	42	44	55	50	53
28	37	34	36	44	42	43	44	40	42	57	48	51
29	37	36	36	44	43	43	45	43	43	51	45	47
30	38	36	38	44	44	45	46	42	44	55	48	50
31	---	---	---	50	44	46	49	44	46	---	---	---
MONTH	49	27	39	50	29	39	55	40	45	58	37	47
YEAR	76	27	52									

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.5	11.0	11.5	8.5	7.5	8.0	6.5	6.0	6.5	---	---	---
2	12.0	11.0	11.5	9.0	8.0	9.0	6.5	6.0	6.0	---	---	---
3	12.0	11.0	11.5	9.5	9.0	9.5	6.5	6.0	6.0	---	---	---
4	12.0	10.5	11.5	9.5	7.5	8.5	6.0	5.5	6.0	---	---	---
5	12.0	11.0	11.5	7.5	7.5	7.5	6.0	5.5	6.0	---	---	---
6	11.5	10.5	11.0	8.5	7.5	8.0	5.5	5.0	5.5	---	---	---
7	11.5	11.0	11.5	9.0	8.5	8.5	5.0	4.5	4.5	---	---	---
8	12.0	11.0	11.5	8.5	8.0	8.5	5.5	5.0	5.0	---	---	---
9	12.0	11.0	11.5	8.0	7.0	7.5	5.5	5.0	5.5	---	---	---
10	11.0	10.5	11.0	7.0	6.5	6.5	5.5	5.0	5.0	---	---	---
11	11.5	10.5	11.0	6.5	6.0	6.0	5.5	5.0	5.5	---	---	---
12	11.0	10.5	10.5	6.0	6.0	6.0	5.5	4.5	5.0	---	---	---
13	11.0	10.0	10.5	6.5	6.0	6.0	5.0	4.5	4.5	---	---	---
14	10.5	10.0	10.0	6.5	5.5	6.0	5.5	5.0	5.0	---	---	---
15	10.5	10.0	10.5	6.5	5.5	6.0	5.5	5.0	5.0	---	---	---
16	11.0	10.5	10.5	7.5	6.5	6.5	5.0	5.0	5.0	3.5	3.5	3.5
17	11.5	10.5	11.0	7.5	7.0	7.5	5.0	5.0	5.0	3.5	3.0	3.5
18	11.5	11.0	11.5	7.5	6.5	7.0	5.5	5.0	5.5	3.5	3.0	3.0
19	11.0	10.5	11.0	6.5	5.5	6.0	5.5	5.0	5.0	4.0	3.5	3.5
20	11.5	10.5	11.0	5.5	5.0	5.5	5.5	5.0	5.0	4.0	4.0	4.0
21	10.5	10.0	10.5	5.5	5.0	5.5	5.5	5.0	5.5	4.0	3.5	3.5
22	10.5	9.0	9.5	6.0	5.5	5.5	5.5	5.5	5.5	3.5	3.0	3.0
23	10.0	9.0	9.5	6.0	5.5	6.0	5.5	5.0	5.0	3.5	3.0	3.5
24	10.5	9.5	10.0	7.0	6.0	6.5	5.0	4.5	5.0	4.0	3.5	3.5
25	10.0	9.5	10.0	7.0	6.5	7.0	4.5	4.0	4.5	3.5	3.5	3.5
26	9.5	8.0	9.0	7.0	6.5	6.5	4.0	4.0	4.0	3.5	2.5	3.0
27	9.5	9.0	9.5	6.5	6.0	6.0	4.0	3.5	4.0	3.0	2.5	3.0
28	10.0	9.0	9.5	6.5	6.0	6.5	3.5	2.5	3.0	3.0	3.0	3.0
29	10.0	9.0	9.5	6.5	6.0	6.5	2.5	1.5	2.0	2.5	2.5	2.5
30	8.5	8.0	8.5	6.5	6.5	6.5	---	---	---	2.0	2.0	2.0
31	8.5	7.5	8.0	---	---	---	---	---	---	2.5	1.5	2.0
MONTH	12.5	7.5	10.5	9.5	5.0	7.0	6.5	1.5	5.0	4.0	1.5	3.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	2.0	1.5	2.0	4.5	4.0	4.5	7.0	6.0	6.5	9.0	8.5	8.5
2	2.0	1.5	1.5	5.0	4.0	4.5	6.5	5.5	6.0	8.5	8.0	8.5
3	2.5	1.5	2.0	4.5	4.0	4.5	6.5	5.5	6.0	9.0	8.0	8.5
4	3.0	2.5	2.5	5.5	4.5	5.0	5.5	5.5	5.5	9.0	8.0	8.5
5	3.5	2.5	3.0	5.0	4.5	4.5	7.5	5.5	6.5	8.0	7.5	8.0
6	3.0	3.0	3.0	5.0	4.5	5.0	7.5	7.0	7.0	8.0	7.5	7.5
7	3.0	2.5	3.0	5.0	5.0	5.0	7.0	5.5	6.5	8.5	7.5	8.0
8	3.5	3.0	3.5	5.5	4.5	5.0	7.0	6.5	6.5	9.5	8.0	9.0
9	4.0	3.5	4.0	5.5	5.0	5.0	6.5	5.5	6.0	10.0	8.5	9.5
10	3.5	3.5	3.5	6.0	5.0	5.5	7.5	6.0	7.0	9.5	8.5	9.0
11	4.0	3.5	4.0	6.0	5.5	6.0	8.5	6.5	7.0	10.0	8.0	9.0
12	4.0	3.5	3.5	7.0	5.5	6.0	7.5	6.0	6.5	10.0	9.0	9.5
13	4.5	4.0	4.0	6.5	5.5	6.0	6.0	5.5	6.0	11.0	8.5	9.5
14	4.0	3.5	3.5	6.5	5.5	6.0	6.0	5.0	5.5	12.0	9.5	10.5
15	3.5	3.0	3.0	6.5	6.0	6.5	6.5	6.0	6.0	11.5	9.5	10.5
16	3.5	3.0	3.5	6.0	5.5	5.5	7.0	6.0	6.5	11.0	9.5	10.0
17	4.0	3.5	3.5	6.0	5.5	5.5	7.0	6.5	6.5	10.0	8.5	9.0
18	4.0	3.5	4.0	7.0	5.5	6.0	7.0	6.0	6.5	10.0	8.5	9.5
19	4.5	4.0	4.0	7.0	5.5	6.0	8.0	6.5	7.0	10.5	8.5	9.5
20	4.0	3.5	4.0	7.0	5.5	6.5	8.5	6.0	7.0	11.0	9.0	10.0
21	4.5	4.0	4.0	7.5	6.0	6.5	9.0	7.0	8.0	11.5	9.0	10.0
22	4.5	3.5	4.0	7.5	6.0	6.5	10.5	7.5	9.0	11.0	9.5	10.5
23	4.0	4.0	4.0	7.5	6.0	7.0	11.0	8.5	10.0	10.5	9.0	10.0
24	4.0	3.5	3.5	8.0	6.0	7.0	11.0	9.0	10.0	10.0	8.5	9.5
25	4.0	3.5	4.0	7.0	6.5	6.5	10.5	8.5	9.5	10.5	9.5	10.0
26	4.5	4.0	4.5	6.5	6.0	6.0	11.0	8.5	9.5	10.5	8.5	9.5
27	5.0	4.5	4.5	7.5	6.0	6.5	11.5	9.0	10.0	8.5	7.5	8.0
28	4.5	4.0	4.5	7.0	6.0	6.5	10.5	9.0	10.0	8.0	7.0	7.5
29	---	---	---	6.5	6.0	6.0	10.0	9.0	9.5	9.5	7.5	8.5
30	---	---	---	6.5	5.5	6.0	9.5	8.0	8.5	11.0	9.0	10.0
31	---	---	---	7.0	5.5	6.5	---	---	---	12.5	10.0	11.0
MONTH	5.0	1.5	3.5	8.0	4.0	6.0	11.5	5.0	7.5	12.5	7.0	9.0

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.0	11.0	12.0	10.0	9.5	10.0	17.0	15.5	16.0	14.0	13.5	14.0
2	12.5	11.0	12.0	10.5	9.5	10.0	16.5	14.0	15.5	14.0	13.5	13.5
3	12.0	10.5	11.5	12.5	9.5	11.0	16.0	14.5	15.0	13.0	13.0	13.0
4	11.5	9.5	11.0	13.0	11.5	12.0	16.5	13.5	15.0	13.0	12.5	12.5
5	10.5	9.5	10.0	13.5	11.5	12.5	16.5	14.0	15.0	12.5	12.0	12.5
6	9.5	8.5	9.0	14.0	12.5	13.5	16.0	13.5	15.0	13.0	12.0	12.5
7	10.5	8.0	9.5	14.0	12.5	13.5	16.0	13.5	15.0	13.5	13.0	13.5
8	12.0	9.5	11.0	14.5	12.5	13.5	16.5	13.5	15.0	13.5	13.0	13.0
9	13.0	10.5	11.5	14.5	13.0	14.0	17.0	14.0	15.5	13.0	13.0	13.0
10	13.5	11.0	12.0	13.5	11.5	13.0	17.0	14.5	15.5	13.5	12.5	13.0
11	12.5	11.0	11.5	11.5	11.0	11.0	16.5	14.0	15.5	13.5	12.5	13.0
12	12.0	10.5	11.0	13.0	11.0	12.0	17.0	14.0	15.5	13.5	12.5	13.0
13	12.0	10.5	11.0	12.5	11.0	12.0	17.0	14.5	16.0	14.0	13.0	13.5
14	11.5	9.5	10.5	14.0	11.5	13.0	16.0	14.0	15.0	14.0	13.0	13.5
15	11.0	10.0	10.5	16.0	13.0	14.0	14.0	13.5	13.5	14.0	13.5	13.5
16	11.0	10.0	10.5	16.5	13.5	15.0	15.0	13.0	14.0	14.0	13.5	13.5
17	10.5	9.5	10.0	15.5	14.0	14.5	15.0	14.0	14.5	14.5	13.5	14.0
18	10.5	9.5	10.0	15.5	14.0	14.5	14.0	13.0	13.0	14.5	13.5	13.5
19	10.0	9.0	9.5	15.5	14.0	14.5	14.0	13.0	13.5	13.5	13.0	13.0
20	10.5	9.0	10.0	16.0	14.0	15.0	15.0	13.5	14.0	13.0	13.0	13.0
21	12.5	9.5	11.0	15.5	14.5	15.0	15.5	14.0	14.5	13.0	13.0	13.0
22	13.0	11.5	12.0	15.5	13.5	14.5	14.5	13.5	14.0	13.0	13.0	13.0
23	13.5	11.0	12.5	15.5	14.0	15.0	15.0	13.5	14.5	13.5	13.0	13.0
24	14.5	11.5	13.0	15.5	14.0	14.5	15.5	14.0	14.5	13.5	13.0	13.5
25	14.5	12.0	13.0	16.0	14.0	15.0	15.5	14.0	14.5	13.5	12.5	13.0
26	14.5	12.0	13.5	16.0	14.0	15.0	15.5	14.0	15.0	13.0	12.5	12.5
27	14.0	12.0	13.0	15.5	14.0	15.0	15.0	14.0	14.0	13.0	12.0	12.5
28	14.0	12.0	13.0	14.5	14.0	14.5	14.0	13.5	13.5	12.0	11.5	12.0
29	13.0	11.0	12.0	15.0	12.5	14.0	14.5	13.5	14.0	12.0	12.0	12.0
30	11.0	10.0	10.5	16.0	13.0	14.5	14.0	13.0	13.5	12.0	11.5	12.0
31	---	---	---	17.5	14.0	15.5	13.5	12.5	13.0	---	---	---
MONTH	14.5	8.0	11.5	17.5	9.5	13.5	17.0	12.5	14.5	14.5	11.5	13.0
YEAR	17.5	1.5	9.0									

DATE	TIME	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
OCT , 1978						
24...	1000	13.4	14.3	3.75	.150	35
JAN , 1979						
23...	1145	2.91	3.07	.150	.000	39
MAY						
08...	1030	27.5	28.5	5.91	2.91	49

12200500 SKAGIT RIVER NEAR MOUNT VERNON, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	MAR 20,79	MAY 30,79	JUN 26,79	JUL 25,79	AUG 21,79	SEP 25,79
TIME	1225	1030	1040	1200	1050	1125
TOTAL CELLS/ML	200	26	0	230	13	540
DIVERSITY: DIVISION	0.5	1.0	0.0	1.2	0.0	0.1
.CLASS	0.5	1.0	0.0	1.2	0.0	0.1
..ORDER	1.2	1.0	0.0	1.6	0.0	0.2
...FAMILY	3.1	1.0	0.0	1.6	0.0	2.7
....GENUS	3.2	1.0	0.0	1.6	0.0	3.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-	5	1
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	10	5	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	45#	22	--	-	--	-	26	11	--	-	10	2
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	5	2	--	-	--	-	--	-	--	-	150#	28
....COCCONEIS	10	5	--	-	--	-	--	-	--	-	5	1
...CYMBELLACEAE												
....CYMBELLA	5	2	--	-	--	-	--	-	--	-	66	12
...DIATOMACEAE												
....DIATOMA	10	5	--	-	--	-	--	-	--	-	10	2
...FRAGILARIACEAE												
....ASTERIONELLA	--	-	--	-	--	-	120#	50	--	-	10	2
....FRAGILARIA	25	13	--	-	--	-	--	-	--	-	25	5
....SYNEDRA	--	-	--	-	--	-	--	-	--	-	81	15
...GOMPHONEMATACEAE												
....GOMPHONEMA	10	5	--	-	--	-	--	-	--	-	30	6
...MERIDIONACEAE												
....MERIDION	10	5	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE												
....NAVICULA	35#	17	--	-	--	-	--	-	--	-	71	13
...NITZSCHIACEAE												
....NITZSCHIA	30	15	13#	50	--	-	--	-	--	-	76	14
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	--	-	13	6	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	77#	33	13#	100	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....TRACHELOMONAS	5	2	13#	50	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

12201500 SAMISH RIVER NEAR BURLINGTON, WA

LOCATION.--Lat 48°32'46", long 122°20'13", in SE¼SE¼ sec.6, T.35 N., R.4 E., Skagit County, Hydrologic Unit 17110002, at Interstate Highway bridge, 500 ft (152 m) upstream from former gaging station, and 5.0 mi (8.0 km) north of Burlington.

DRAINAGE AREA.--87.8 mi^2 (227.4 km^2).

PERIOD OF RECORD.--Water years 1959-70, 1973-74, 1977 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1973 to April 1974.

REMARKS.--Water discharge from rating; discharge value is good. Prior to October 1973 samples taken at site 0.2 mi (0.3 km) upstream.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978 24...	1320	180	83	7.1	10.0	135	17
NOV 14...	1400	165	102	7.2	4.0	40	4.0
DEC 19...	1345	178	85	7.4	4.5	45	6.0
JAN , 1979 10...	1300	118	100	7.3	3.5	30	10
FEB 07...	1300	660	63	6.9	2.0	60	38
MAR 06...	1230	740	55	7.0	7.5	95	36
APR 10...	1400	230	77	7.4	9.3	40	4.0
MAY 15...	1250	100	87	7.4	12.8	40	4.0
JUN 26...	1305	34	110	7.7	15.6	25	2.0
JUL 17...	1430	27	120	7.6	19.1	30	2.0
AUG 28...	1320	22	127	7.8	15.5	35	2.0
SEP 25...	1305	22	115	7.5	13.0	15	2.0

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978 24...	--	.66	.05	.040	.01	.03
NOV 14...	13.1	1.1	.02	.020	.01	.03
DEC 19...	12.8	1.2	.01	.010	.00	.00
JAN , 1979 10...	13.3	1.2	.01	.080	.00	.00
FEB 07...	13.7	1.8	.07	.050	.00	.00
MAR 06...	12.2	.97	.03	.040	.01	.03
APR 10...	11.5	.88	.02	.030	.05	.15
MAY 15...	11.6	.76	.02	.000	.00	.00
JUN 26...	10.2	.85	.02	.010	.00	.00
JUL 17...	9.4	.89	.05	.020	.01	.03
AUG 28...	10.6	.90	.01	.010	.00	.00
SEP 25...	11.2	.90	.01	.030	.00	.00

12202500 WHATCOM LAKE NEAR BELLINGHAM, WA

LOCATION.--Lat 48°44'55", long 122°23'40", in SW¼SW¼ sec.26, T.38 N., R.3 E., Whatcom County, Hydrologic Unit 17110002, on west shore, 1.0 mi (1.6 km) east of Bellingham, near Strawberry Point, at Geneva.

DRAINAGE AREA.--55.9 mi² (144.8 km²) at outlet of lake.

PERIOD OF RECORD.--February 1913 to September 1914, October 1978 to September 1979. Chemical analyses water years 1964-70.

GAGE.--Staff gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by City of Bellingham).

REMARKS.--Lake is formed by concrete control dam completed to elevation 315.00 ft (96.01 m) in 1937. The dam has three 18'x6' taintor gates that raise from bottom. Water is diverted from Lake Whatcom at intake structure located near intersection of Cable and Whatcom Boulevard. Water use is for both municipal and industrial supply for the City of Bellingham. Since April 1962, to supplement Whatcom Creek, water, at times is diverted from Middle Fork Nooksack River to Whatcom Lake via Anderson Creek.

COOPERATION.--Record furnished by City of Bellingham.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed gage height, 315.75 ft (96.241 m) Feb. 19, 1913, minimum observed gage height, 311.75 ft (95.021 m) Nov. 27, 28, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum observed gage height, 316.22 ft (96.384 m) Feb. 1, 1971, minimum observed, 308.38 ft (93.994 m) Dec. 5, 1957, record furnished by City of Bellingham.

EXTREMES FOR CURRENT YEAR.--Maximum observed gage height, 314.24 ft (95.780 m) May 16, 17, minimum observed gage height, 311.75 ft (95.021 m) Nov. 27, 28.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
INSTANTANEOUS OBSERVATIONS AT 0830

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	311.94	311.88	---	312.12	312.44	---	313.79	314.02	---	313.56	---
2	312.50	311.92	---	312.42	312.12	312.56	312.40	313.80	---	313.88	313.53	---
3	312.43	311.94	---	312.40	---	---	312.42	313.79	---	313.84	313.51	---
4	312.42	312.30	312.08	312.38	---	---	312.58	313.86	314.02	---	---	313.08
5	312.42	---	312.10	312.38	312.12	312.36	312.58	---	314.04	313.88	---	313.08
6	312.40	312.46	312.10	---	312.17	312.44	312.60	---	314.06	313.88	313.42	313.06
7	312.38	312.50	312.11	---	312.29	312.48	---	314.06	314.06	---	---	313.05
8	312.38	312.56	---	312.28	312.40	312.48	---	314.08	314.02	---	313.40	---
9	312.31	312.56	---	312.20	312.50	312.46	312.75	314.08	---	313.84	313.35	---
10	312.32	312.50	---	312.24	---	---	312.80	314.10	---	313.86	313.33	313.10
11	312.28	312.40	312.06	312.20	---	---	312.84	314.14	314.00	313.84	---	313.09
12	312.26	---	312.18	312.20	---	312.38	312.88	---	314.00	313.85	---	313.09
13	312.20	312.26	312.20	---	313.00	312.38	312.88	---	314.00	313.86	313.28	313.06
14	312.18	312.17	312.22	---	313.00	312.40	---	314.18	313.98	---	313.24	313.05
15	---	312.13	312.18	312.10	312.98	312.40	---	314.20	313.96	---	313.23	---
16	312.10	312.08	---	312.06	312.94	312.48	313.10	314.24	---	313.80	313.20	---
17	312.10	312.04	---	312.04	---	---	313.16	314.24	---	313.80	313.19	313.00
18	312.08	---	312.17	311.98	---	---	313.28	314.22	313.98	313.79	---	312.98
19	312.06	---	312.16	312.02	---	312.54	313.30	---	313.98	313.78	---	313.00
20	312.02	311.98	312.15	---	312.96	312.52	313.38	---	313.96	313.76	313.19	312.97
21	312.00	311.96	312.16	---	312.90	312.92	---	314.20	313.96	---	313.19	312.96
22	---	311.94	312.16	312.10	312.84	312.52	---	314.16	313.94	---	313.19	---
23	312.00	---	---	312.14	312.76	312.50	313.54	314.16	---	313.70	313.20	---
24	311.98	---	---	312.10	---	---	313.58	314.16	---	313.70	313.20	312.92
25	311.96	---	---	312.12	---	---	313.60	314.10	313.90	313.68	---	312.88
26	311.96	---	312.45	312.12	312.58	312.44	313.64	---	313.90	313.66	---	312.88
27	311.94	311.75	312.44	---	312.56	312.40	313.66	---	313.89	313.64	313.18	312.88
28	311.94	311.75	---	---	312.52	312.42	---	---	313.89	---	313.14	312.88
29	---	311.77	312.40	312.16	---	312.38	---	314.10	313.88	---	313.13	---
30	311.95	311.80	---	312.16	---	312.38	313.74	314.04	---	313.60	313.11	---
31	311.93	---	---	312.16	---	---	---	314.04	---	313.57	313.09	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---

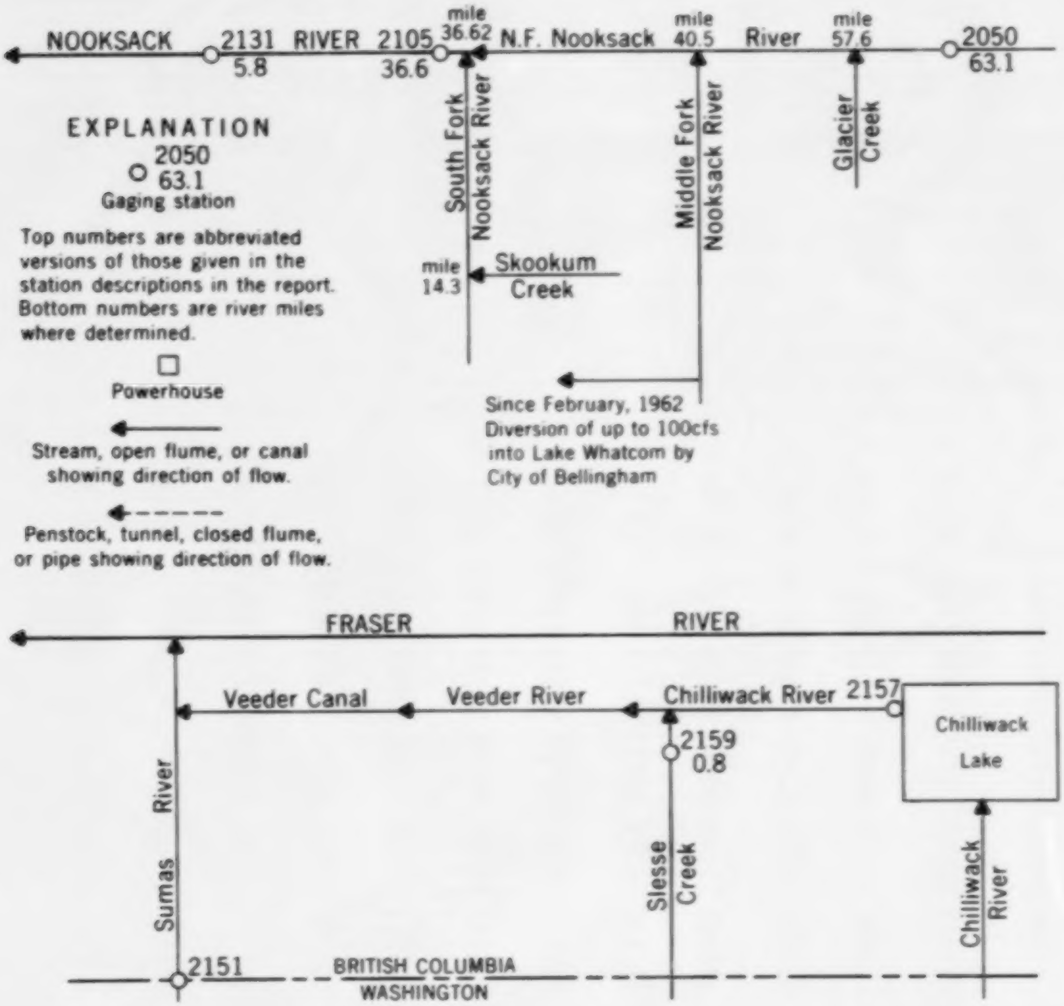
NOOKSACK
2131
5.8
RIVER
2105
36.6
mile
36.62
N.F. Nooksack
mile
40.5
River
mile
57.6
2050
63.1
South Fork
Nooksack River
Middle Fork
Nooksack River
Glacier
Creek
mile
14.3
Skookum
Creek
Since February, 1962
Diversion of up to 100cfs
into Lake Whatcom by
City of Bellingham
EXPLANATION
2050
63.1
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
FRASER
RIVER
Veeder Canal
Veeder River
Chilliwack River
2157
Chilliwack
Lake
2159
0.8
Sumas
River
Slesse
Creek
Chilliwack
River
2151
BRITISH COLUMBIA
WASHINGTON

Figure 18. Gaging stations in Nooksack and Fraser River basins.

12205000 NORTH FORK NOOKSACK RIVER BELOW CASCADE CREEK, NEAR GLACIER, WA

LOCATION.--Lat 48°54'22", long 121°50'35", in SE¼SW¼ sec.36, T.40 N., R.7 E., Whatcom County, Hydrologic Unit 17110004, Mt. Baker National Forest, on right bank 0.2 mi (0.3 km) downstream from Cascade Creek, 0.3 mi (0.5 km) downstream from Deadhorse Creek, 4.8 mi (7.7 km) east of Glacier, 5.5 mi (8.8 km) upstream from Glacier Creek, and at mile 63.1 (101.5 km).

DRAINAGE AREA.--105 mi² (272 km²).

PERIOD OF RECORD.--October 1937 to current year. Published as Nooksack River above Cascade Creek, near Glacier 1937-58 and as Nooksack River below Cascade Creek, near Glacier 1958-66.

REVISED RECORDS.--WSP 1096. 1946.

GAGE.--Water-stage recorder. Altitude of gage is 1,245 ft (379.5 m), from river-profile map. Supplementary water-stage recorder on left bank at datum 1.19 ft (0.363 m) lower, used as principal gage prior to Oct. 1, 1953, and Oct. 8, 1958, to Sept. 30, 1959.

REMARKS.--Records good except those for period of no gage-height record, Dec. 20 to Feb. 7, which are fair. No diversion above station. Some regulation at low flow by powerplant at Excelsior. Summer flows augmented by glacier melt.

AVERAGE DISCHARGE.--42 years, 773 ft³/s (21.89 m³/s), 99.97 in/yr (2,539 mm/yr), 560,000 acre-ft/yr (690 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s (292 m³/s) Nov. 26, 1949, gage height, 10.50 ft (3.200 m), supplementary gage, from rating curve extended above 2,900 ft³/s (82.1 m³/s) on basis of contracted opening measurement at gage height 8.13 ft (2.478 m), supplementary gage; minimum, 60 ft³/s (1.70 m³/s) Mar. 12, 1969; minimum daily, 98 ft³/s (2.78 m³/s) Jan. 8, 1979 result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,600 ft³/s (102 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 7	2130	*5,030	142	*7.95	2.423

Minimum daily discharge, 98 ft³/s (2.78 m³/s) Jan. 8, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	635	278	255	148	110	258	278	988	1090	994	755	655
2	525	297	239	138	102	223	268	1080	1460	770	705	1130
3	494	445	255	130	100	210	261	1040	1650	675	660	1200
4	454	1310	261	118	110	327	285	1570	1620	760	585	922
5	414	655	239	112	129	868	331	1510	1790	826	580	1090
6	419	565	220	103	142	1300	358	1300	1370	910	530	810
7	423	2190	210	108	130	1630	358	988	1020	910	507	720
8	428	1890	213	98	133	1020	369	815	934	1280	540	1790
9	498	1020	213	102	239	725	350	735	1060	1160	610	1460
10	600	740	210	120	197	600	346	675	1280	1750	685	926
11	516	615	312	170	192	565	320	630	1430	1270	650	610
12	397	535	245	158	232	585	346	655	1310	1070	645	516
13	354	472	226	160	690	535	494	735	1110	862	725	525
14	384	420	213	155	414	520	418	826	880	805	695	615
15	392	401	213	146	293	690	358	910	765	910	585	655
16	377	419	210	138	248	660	339	1020	856	1020	590	560
17	369	410	205	136	236	550	361	922	886	1120	640	476
18	369	373	197	134	247	485	342	886	892	1120	580	507
19	361	335	191	140	239	445	327	862	880	1100	565	511
20	494	316	187	200	216	423	304	862	826	1090	575	507
21	358	304	190	280	197	414	293	958	780	1010	730	472
22	297	284	260	240	187	410	297	1190	805	856	838	384
23	346	278	250	180	174	423	331	1400	868	790	725	358
24	615	271	390	170	179	450	373	1380	940	785	590	361
25	342	264	350	160	507	450	428	1450	1070	832	605	388
26	297	252	250	153	580	419	511	1740	1190	862	645	419
27	350	255	225	148	380	384	675	1430	1170	832	680	476
28	331	264	215	140	304	358	880	1040	1160	755	605	650
29	342	245	194	133	---	335	1040	820	1150	645	585	354
30	308	268	175	128	---	316	1070	745	1140	645	590	342
31	285	---	165	115	---	293	---	856	---	755	535	---
TOTAL	12774	16384	7178	4553	6965	16951	12703	32018	33372	29169	19535	20289
MEAN	412	546	232	147	249	547	423	1033	1112	941	630	676
MAX	635	2190	390	280	690	1630	1070	1740	1790	1750	838	1790
MIN	285	245	165	98	100	210	261	630	765	645	507	342
CFSM	3.92	5.20	2.21	1.40	2.37	5.21	4.03	9.84	10.6	8.96	6.00	6.44
IN.	4.53	5.80	2.54	1.61	2.47	6.01	4.50	11.34	11.82	10.33	6.92	7.19
AC-FT	25340	32500	14240	9030	13820	33620	25200	63510	66190	57860	38750	40240

CAL YR 1978 TOTAL 249083 MEAN 682 MAX 3550 MIN 165 CFSM 6.50 IN 88.25 AC-FT 494100
WTR YR 1979 TOTAL 211891 MEAN 581 MAX 2190 MIN 98 CFSM 5.53 IN 75.07 AC-FT 420300

12210500 NOOKSACK RIVER AT DEMING, WA

LOCATION.--Lat 48°48'38", long 122°12'13", in lot 12, NE¼SE¼ sec.6, T.38 N., R.5 E., Whatcom County, Hydrologic Unit 17110004, on left bank 800 ft (240 m) downstream from South Fork, 1.1 m (1.8 km) southeast of Deming, and at mile 36.6 (58.9 km).

DRAINAGE AREA.--584 mi² (1,513 km²), includes 5 mi² (13 km²) in Canada.

PERIOD OF RECORD.--September 1910 to March 1911 (gage heights only), July 1935 to September 1957, October 1957 to September 1964, discharges above 3,500 ft³/s (99.1 m³/s) only, October 1964 to current year. Published as "~~near Deming~~" 1910-11. Chemical analyses July 1959 to September 1971, October 1973 to September 1974, at site 5.7 mi (9.2 km) downstream from gaging station.

REVISED RECORDS.--WSP 1286: 1951. WSP 1736: 1937(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 204.2 ft (62.24 m), National Geodetic Vertical Datum of 1929. Prior to Dec. 5, 1910, nonrecording gage at site 1.1 mi (1.8 km) downstream at different datum. Dec. 5, 1910, to Mar. 31, 1911, nonrecording gage at site 5 mi (8.0 km) downstream at different datum. July 20 to Sept. 19, 1935, nonrecording gage at same site and datum.

REMARKS.--Records fair. Slight regulation by powerplant at Excelsior. Since February 1962, city of Bellingham diverts up to 100 ft³/s (2.83 m³/s) from the Middle Fork for municipal use. Summer flows augmented by glacier melt at source.

AVERAGE DISCHARGE.--37 years (water years 1936-57, 1965-79), 3,354 ft³/s (94.99 m³/s), 77.99 in/yr (1,981 mm/yr) 2,430,000 acre-ft/yr (3,000 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,200 ft³/s (1,220 m³/s) Feb. 10, 1951, gage height, 15.69 ft (4.782 m), from rating curve extended above 25,000 ft³/s (708 m³/s); maximum gage height, 15.89 ft (4.843 m) Dec. 3, 1975; minimum recorded, 502 ft³/s (14.2 m³/s) Nov. 29, 1952, gage height, 3.72 ft (1.134 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Peak of Mar. 15, 1908, reportedly reached a stage of 20 ft (6.1 m). Peak of Feb. 27, 1932, reached a stage of 16.8 ft (5.12 m), from floodmarks, discharge, 49,300 ft³/s (1,400 m³/s). Peak of November 1909 reached a stage about equal to that of the 1932 peak.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 8	0100	*18,000	510	*11.50	3.505

Minimum daily discharge, 750 ft³/s (21.2 m³/s) Jan. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2310	1400	2460	1180	810	2020	1720	3960	3360	3330	1670	1380
2	2030	1510	2010	1080	775	1800	1630	3850	4010	2450	1580	2190
3	1870	2370	2160	980	760	1690	1580	3770	4530	2000	1500	2920
4	1760	7900	2850	920	850	2660	2060	5720	4800	2070	1330	2580
5	1630	4110	2270	860	1240	7280	2550	6250	6100	2120	1290	2360
6	1590	3270	1950	820	1640	8970	2550	6350	5180	2260	1220	2330
7	1570	6620	1780	780	2080	8730	2450	4980	4060	2280	1180	1720
8	1510	9990	1710	750	1570	5460	2490	4450	3420	2780	1190	3730
9	1580	5200	1710	760	2450	4210	2590	3950	3430	2810	1290	4430
10	1970	3840	1650	940	2370	3680	2410	3540	3870	3750	1490	2890
11	1870	3150	2450	1480	2580	3520	2210	3120	4210	3190	1450	1970
12	1510	2740	2150	1210	3650	3680	2070	3160	4060	2750	1430	1590
13	1360	2420	1860	1260	5180	3400	3060	3400	3610	2270	1580	1490
14	1370	2220	1880	1190	3630	3260	2910	3700	2890	2080	1660	1590
15	1380	2040	1780	1120	2670	4000	2530	3870	2420	2140	1390	1690
16	1340	2410	1720	1080	2250	3990	2330	4040	2550	2420	1350	1540
17	1300	3030	1630	1050	2030	3320	2370	3600	2720	2570	1470	1310
18	1290	2450	1560	1030	2740	2930	2420	3450	2700	2650	1350	1400
19	1250	2130	1490	1080	2530	2720	2350	3360	2680	2570	1310	1380
20	1750	1940	1460	1640	2180	2640	2190	3310	2590	2500	1320	1370
21	1590	1450	1480	2240	1920	2620	2070	3400	2270	2400	1620	1340
22	1240	1760	1860	1560	1720	2590	2070	3990	2220	2030	2130	1100
23	1200	1700	1970	1390	1590	2630	2310	4500	2260	1870	1910	988
24	2990	1630	3200	1310	1550	2740	2520	4290	2500	1800	1470	979
25	1750	1600	2220	1230	2270	2860	2640	4210	2770	1870	1380	1050
26	1410	1540	1890	1180	3600	2450	2890	4740	3030	1940	1480	1110
27	1500	1540	1760	1100	2850	2260	3460	4330	3000	1940	1500	1010
28	1520	1910	1690	1100	2330	2120	3970	3680	2920	1770	1400	1850
29	1740	1660	1500	1030	---	2000	4140	3090	2990	1540	1380	1150
30	1690	2150	1380	980	---	1960	4020	2680	3000	1470	1430	1010
31	1490	---	1250	840	---	1820	---	2820	---	1670	1290	---
TOTAL	50360	88130	58730	35230	61895	105750	76560	123560	100150	71210	45040	53347
MEAN	1625	2938	1895	1136	2211	3411	2552	3986	3338	2297	1453	1778
MAX	2990	9990	3200	2240	5180	8970	4140	6350	6100	3750	2130	4430
MIN	1200	1400	1250	750	760	1690	1580	2680	2220	1470	1180	979
CFSM	2.78	5.03	3.25	1.95	3.79	5.84	4.37	6.83	5.72	3.93	2.49	3.05
IN.	3.21	5.61	3.76	2.24	3.94	6.74	4.88	7.87	6.38	4.54	2.87	3.40
AC-FT	99890	174800	116500	69880	122800	209800	151900	245100	198600	141200	89340	105800

CAL YR 1978 TOTAL 946650 MEAN 2599 MAX 9990 MIN 1200 CFSM 4.45 IN 60.43 AC-FT 1878000
WTR YR 1979 TOTAL 869962 MEAN 2383 MAX 9990 MIN 750 CFSM 4.08 IN 55.42 AC-FT 1726000

12210700 NOOKSACK RIVER AT NORTH CEDARVILLE, WA

LOCATION.--Lat 48°50'31", long 122°17'35", in SE¼NE¼ sec.28, T.39 N., Whatcom County, Hydrologic Unit 17110004, at State Highway 542 bridge, 4.0 mi (6.4 km) northwest of Deming, 5.7 mi (9.2 km) downstream from gaging station (12210500)..

DRAINAGE AREA.--584 mi^2 (1,513 km^2).

PERIOD OF RECORD.--Water years 1959-1971, 1973-74, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is fair. Prior to 1978 water year data published as 12210500 Nooksack River at Deming.

COOPERATION.-Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM COBALT UNITS)	TURBIDITY (NTU)
OCT , 1978							
24...	1420	2960	82	7.4	9.1	105	65
NOV							
14...	1450	2200	112	7.4	3.9	15	4.0
DEC							
19...	1445	1490	109	7.6	3.7	25	4.0
JAN , 1979							
10...	1400	E940	120	7.7	1.8	5	5.0
FEB							
07...	1405	2030	82	7.5	3.0	55	44
MAR							
06...	1325	8760	52	7.3	6.2	145	160
APR							
10...	1440	2440	87	7.6	7.8	25	7.0
MAY							
15...	1335	3800	70	7.5	10.1	35	10
JUN							
26...	1400	3090	68	7.7	14.1	15	12
JUL							
17...	1535	2440	75	7.8	16.9	60	14
AUG							
28...	1400	1320	85	7.8	15.1	40	21
SEP							
25...	1415	1060	98	7.6	12.2	15	10

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1978						
24...	11.2	.53	.03	.170	.01	.03
NOV						
14...	13.3	.33	.01	.010	.00	.00
DEC						
19...	13.5	.40	.01	.000	.01	.03
JAN , 1979						
10...	13.9	.36	.01	.020	.00	.00
FEB						
07...	13.5	.70	.03	.020	.00	.00
MAR						
06...	12.8	.35	.05	.060	.01	.03
APR						
10...	12.2	.27	.01	.010	.02	.06
MAY						
15...	11.3	.13	.00	.010	.00	.00
JUN						
26...	10.5	.06	.06	.009	.00	.00
JUL						
17...	10.0	.10	.04	.020	.01	.03
AUG						
28...	10.9	.08	.01	.020	.00	.00
SEP						
25...	11.0	.09	.01	.010	.03	.09

12213100 NOOKSACK RIVER AT FERNDALE, WA

LOCATION.--Lat 48°50'42", long 122°35'17", in NE¼NW¼ sec.29, T.39 N., R.2 E., Whatcom County, Hydrologic Unit 17110004, on right bank 300 ft (91 m) downstream from highway bridge at Ferndale and 5.8 mi (9.3 km) upstream from mouth.

DRAINAGE AREA.--786 mi² (2,036 km²), of which 48.9 mi² (126.7 km²) is in Canada.

PERIOD OF RECORD.--October 1966 to current year. Chemical analyses October 1961 to September 1970.

GAGE.--Water-stage recorder. Datum of gage is 4.61 ft (1.405 m) National Geodetic Vertical Datum of 1929. Prior to July 18, 1968, at site 220 ft (67 m) upstream at datum 4.21 ft (1.283 m) higher.

REMARKS.--Records good except during those for periods of ice effected gage height Dec. 26 to Feb. 3, which are fair. Slight regulation by powerplant at Excelsior. City of Bellingham diverts up to about 100 ft³/s (2.83 m³/s) at times from Middle Fork Nooksack River for municipal use.

AVERAGE DISCHARGE.--13 years, 3,939 ft³/s (111.6 m³/s), 68.06 in/yr (1,729 mm/yr), 2,854,000 acre-ft/yr (3,520 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,400 ft³/s (1,060 m³/s) Dec. 3, 1975, gage height, 21.97 ft (6.696 m); minimum, 718 ft³/s (20.3 m³/s) Nov. 5, 1974, gage height, 3.03 ft (0.924 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*);

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 8	0900	*18,800	532	*15.18	4.627

Minimum daily discharge, 740 ft³/s (21.3 m³/s) Jan. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2480	1440	3140	1110	810	2800	1930	4600	3570	3760	1810	1450
2	2250	1430	2620	1000	770	2490	1880	4400	4230	2850	1760	1930
3	2010	1960	2350	950	780	2290	1880	4300	5050	2360	1690	2480
4	1920	8470	3430	880	1200	2630	2120	5810	5080	2260	1580	2780
5	1750	5620	2970	830	1590	7760	2660	7330	5840	2320	1510	2190
6	1670	3740	2450	800	2040	12400	2740	7670	5690	2380	1470	2700
7	1650	4950	2170	760	3430	12600	2670	5590	4180	2430	1410	1960
8	1580	14200	2030	740	2390	8090	2490	4570	3530	2580	1390	3220
9	1580	7360	2010	820	2860	5680	2900	4090	3480	3020	1410	4750
10	1900	4910	2040	920	3650	4710	2700	3720	3770	3480	1540	3330
11	1900	3910	2560	1490	3460	4340	2550	3340	4220	3730	1620	2290
12	1640	3400	2830	1210	4970	4430	2290	3310	4210	3000	1550	1830
13	1440	2980	2300	1230	7490	4190	2840	3460	3700	2610	1620	1620
14	1370	2690	2200	1140	5980	3860	3470	3820	3210	2280	1760	1630
15	1390	2490	2160	1090	4000	4350	2830	4020	2740	2240	1600	1700
16	1360	2620	2080	1060	3270	5410	2630	4360	2630	2460	1510	1670
17	1310	3370	2000	1030	2950	4300	2590	4040	2910	2620	1560	1450
18	1300	3000	1860	1040	3380	3670	2740	3730	2900	2740	1610	1430
19	1260	2520	1770	1040	3630	3290	2850	3650	2800	2700	1510	1450
20	1350	2370	1730	1520	3150	3150	2750	3630	2800	2620	1480	1410
21	1870	2140	1730	2920	2770	3070	2450	3590	2560	2560	1580	1430
22	1330	2040	1920	2040	2470	2990	2320	4230	2440	2280	2000	1250
23	1190	1960	2250	1390	2280	2960	2410	4990	2420	2080	2000	1110
24	2510	1880	3530	1280	2200	3040	2620	4930	2590	1980	1730	1070
25	2010	1850	2900	1200	2610	3020	2710	4760	2830	1990	1560	1090
26	1520	1800	1870	1170	4640	2820	2900	5180	3140	2030	1600	1150
27	1390	1750	1710	1150	4010	2580	3450	5450	3180	2050	1610	1110
28	1560	2070	1590	1070	3280	2440	4400	4330	3060	1970	1560	1570
29	1640	2040	1480	1000	---	2320	4630	3690	3150	1790	1540	1350
30	1810	2030	1320	920	---	2150	4700	3180	2910	1670	1550	1080
31	1570	---	1220	830	---	2050	---	3130	---	1750	1490	---
TOTAL	51530	102990	68220	35630	86060	131880	84100	136900	104820	76590	49610	55480
MEAN	1662	3433	2201	1149	3074	4254	2803	4416	3494	2471	1600	1849
MAX	2510	14200	3530	2920	7490	12600	4700	7670	5840	3760	2000	4750
MIN	1190	1430	1220	740	770	2050	1880	3130	2420	1670	1390	1070
CFSM	2.12	4.37	2.80	1.46	3.91	5.41	3.57	5.62	4.45	3.14	2.04	2.35
IN.	2.44	4.87	3.23	1.69	4.07	6.24	3.98	6.48	4.96	3.62	2.35	2.63
AC-FT	102200	204300	135300	70670	170700	261600	166800	271500	207900	151900	98400	110000

CAL YR 1978 TOTAL 1066950 MEAN 2923 MAX 14200 MIN 1190 CFSM 3.72 IN 50.50 AC-FT 2116000
WTR YR 1979 TOTAL 983810 MEAN 2695 MAX 14200 MIN 740 CFSM 3.43 IN 46.56 AC-FT 1951000

12213140 NOOKSACK RIVER AT BRENNAN, WA.

LOCATION.--Lat 48°49'10", long 122°34'43", in NW¼NE¼ sec.5, T.38 N., R.2 E., Whatcom County, Hydrologic Unit, 17110004, at rural avenue bridge, 0.6 mi (1.0 km) west of Brennan, 2 mi (3.2 km) south of Ferndale, 2 mi (3.2 km) north of Marietta, and 2.5 mi (4.0 km) downstream from gaging station (12213100).

DRAINAGE AREA.--About 790 mi^2 (2,046 km^2).

PERIOD OF RECORD.--Water years 1973, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from nearby station; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
25...	0850	2150	95	7.2	7.8	75	26
NOV							
15...	0830	2540	133	7.4	2.5	20	6.0
DEC							
20...	0900	1720	124	7.2	3.8	40	6.0
FEB , 1979							
08...	0800	2470	104	7.3	2.8	60	32
MAR							
07...	0750	12900	60	7.1	5.6	130	140
APR							
11...	0820	2630	103	7.3	7.4	30	1.0
MAY							
16...	0850	4280	83	7.2	10.7	40	14
JUN							
27...	0825	3090	74	7.8	15.0	15	12
JUL							
18...	0855	2820	81	7.6	17.4	40	18
AUG							
29...	0850	1540	95	7.7	15.6	20	24
SEP							
26...	0800	1070	102	7.1	14.0	15	10

DATE	OXYGEN, DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978						
25...	11.0	.21	.01	.040	.01	.03
NOV						
15...	12.9	.43	.01	.030	.00	.00
DEC						
20...	12.8	.69	.01	.020	.00	.00
FEB , 1979						
08...	12.7	1.1	.22	.070	.01	.03
MAR						
07...	12.3	.47	.05	.070	.01	.03
APR						
11...	11.3	.43	.01	.020	.00	.00
MAY						
16...	10.7	.18	.01	.020	.00	.00
JUN						
27...	9.6	.09	.05	.050	.05	.15
JUL						
18...	9.4	.13	.04	.030	.01	.03
AUG						
29...	9.4	.08	.00	.060	.00	.00
SEP						
26...	9.7	.14	.01	.040	.00	.00

12215100 SUMAS RIVER NEAR HUNTINGDON, BRITISH COLUMBIA

LOCATION.--Lat 49°00'09", long 122°13'50", on highway bridge at international boundary, 1.5 mi (2.4 km) east of Huntingdon.

DRAINAGE AREA.--57.6 mi^2 (149.2 km^2).

PERIOD OF RECORD.--Water years 1971, 1974, 1977 to current year.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM COBALT UNITS)	TURBIDITY (NTU)
OCT , 1978							
24...	1500	38	290	7.4	10.4	70	7.0
NOV							
14...	1530	96	310	7.4	3.9	55	5.0
DEC							
19...	1525	90	285	7.4	4.6	75	6.0
JAN , 1979							
10...	1440	E45	301	7.5	1.0	35	10
FEB							
07...	1445	209	218	7.3	2.8	105	40
MAR							
06...	1410	282	230	7.5	9.4	85	160
APR							
10...	1525	101	260	7.7	10.2	100	9.0
MAY							
15...	1415	65	275	7.6	15.4	65	8.0
JUN							
26...	1455	28	295	8.1	18.2	50	2.0
JUL							
17...	1620	20	280	8.1	21.2	45	4.0
AUG							
28...	1440	25	290	7.8	17.9	50	4.0
SEP							
25...	1450	21	290	7.6	15.2	55	10

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1978						
24...	8.5	1.0	.22	.110	.03	.09
NOV						
14...	11.1	1.8	.14	.080	.03	.09
DEC						
19...	10.4	1.7	.06	.050	.05	.15
JAN , 1979						
10...	11.7	1.6	.06	.080	.00	.00
FEB						
07...	10.1	2.2	1.1	.240	.05	.15
MAR						
06...	9.3	2.2	.16	.120	.04	.12
APR						
10...	11.1	1.3	.16	.090	.05	.15
MAY						
15...	9.3	.94	.08	.070	.00	.00
JUN						
26...	11.4	.94	.16	.090	.04	.12
JUL						
17...	11.1	.89	.15	.150	.07	.21
AUG						
28...	9.8	1.1	.17	.100	.12	.37
SEP						
25...	5.0	1.0	.13	.060	.10	.31

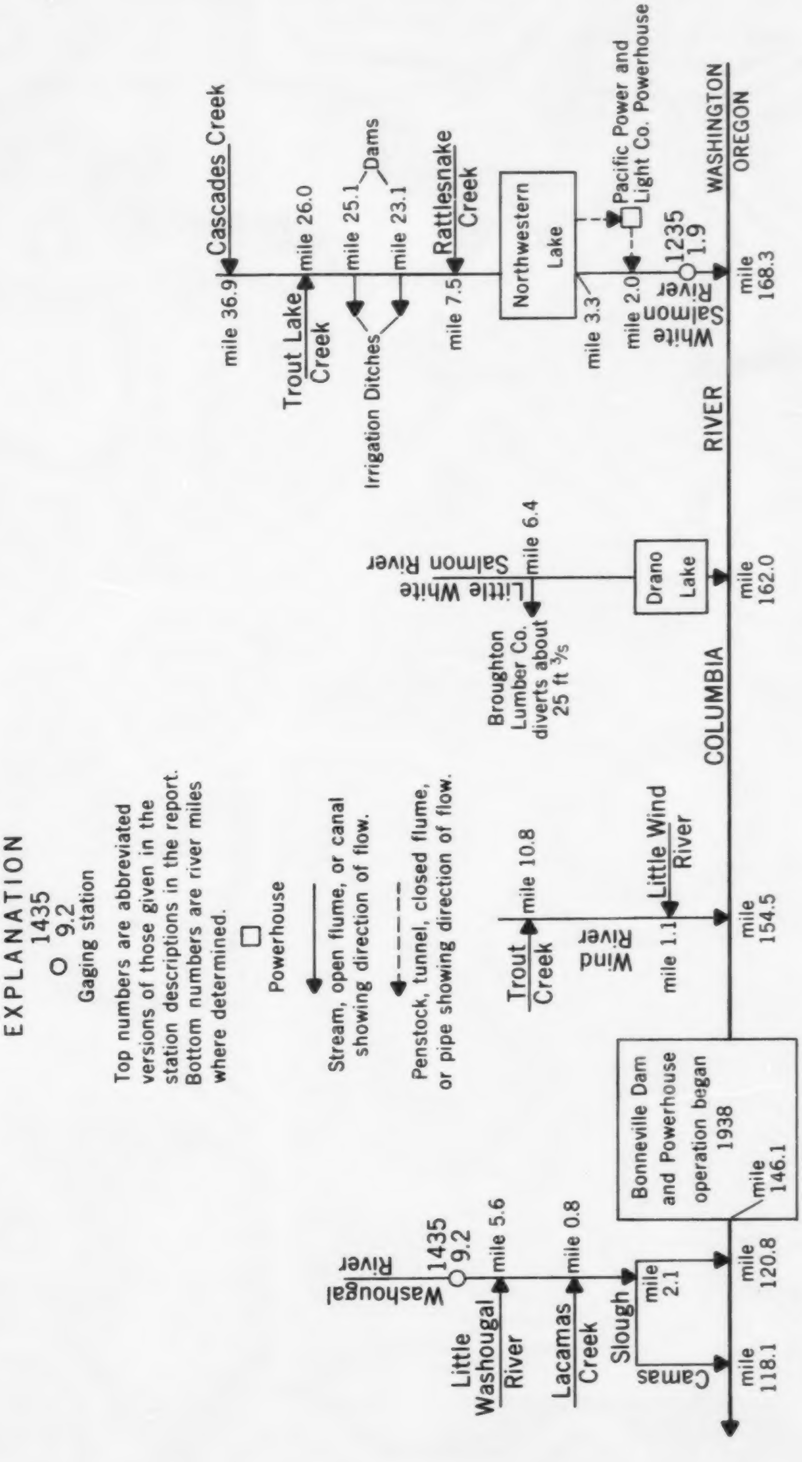
EXPLANATION
1435
9.2
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.
Cascades Creek
mile 36.9
Trout Lake Creek
mile 26.0
mile 25.1
mile 23.1
Dams
Irrigation Ditches
Rattlesnake Creek
mile 7.5
Northwestern Lake
mile 3.3
Pacific Power and Light Co. Powerhouse
mile 2.0
1235
1.9
White Salmon River
mile 168.3
WASHINGTON
OREGON
RIVER
Little White Salmon River
mile 6.4
Broughton Lumber Co. diverts about 25 ft³/s
Drano Lake
mile 162.0
COLUMBIA
Trout Creek
mile 10.8
Wind River
mile 1.1
Little Wind River
mile 154.5
Bonneville Dam and Powerhouse operation began 1938
mile 146.1
Washougal River
1435
9.2
mile 5.6
Little Washougal River
Lacamas Creek
mile 0.8
Camas Slough
mile 2.1
mile 120.8
mile 118.1

Figure 19. Gaging stations in lower Columbia River basin between White Salmon and Washougal Rivers.

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA

LOCATION.--Lat 45°45'08", long 121°31'33", in NW¼NW¼ sec.14, T.3 N., R.10 E., Skamania County, Hydrologic Unit 17070105, on right bank 300 ft (91 m) downstream from bridge, 1,000 ft (305 m) downstream from Pacific Power & Light Co.'s Condit powerplant, 1.7 mi (2.7 km) north of Underwood, and at mile 1.9 (3.1 km).

DRAINAGE AREA.--386 mi² (1,000 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1912 to February 1913 (published as "at Condit Dam, near Underwood") March 1915 to September 1930, September 1935 to current year.

REVISED RECORDS.--WSP 484: 1915-17. WSP 1348: 1936-41(M). WSP 1638: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 112.96 ft (34.340 m) National Geodetic Vertical Datum of 1929. Prior to March 1915, reference point at dam 1 mi (1.6 km) upstream at different datum. March 1915, to July 16, 1918, water-stage recorder at site 200 ft (61 m) upstream at datum 3.24 ft (0.988 m) higher, and July 17, 1918, to Sept. 30, 1930, at datum 2.24 ft (0.683 m) higher than present datum.

REMARKS.--Water-discharge records good. Diversions for irrigation of about 4,500 acres (18 km²) in Trout Lake area. Low and medium flows regulated by powerplant of Pacific Power & Light Co.

AVERAGE DISCHARGE.--59 years (water years 1916-30, 1936-79), 1,127 ft³/s (31.92 m³/s), 816,500 acre-ft/yr (1,007 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 15,300 ft³/s (433 m³/s) Jan. 15, 1974, gage height, 12.85 ft (3.917 m), from rating curve extended above 6,000 ft³/s (170 m³/s); practically no flow at times when powerplant is shut down; minimum daily, 158 ft³/s (4.47 m³/s) Jan. 17, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,290 ft³/s (64.9 m³/s) Feb. 7, gage height, 5.44 ft (1.658 m); minimum recorded, 294 ft³/s (8.33 m³/s) Oct. 3, gage height, 2.59 ft (0.789 m) but may have been less during period of no gage-height record Sept. 12-30; minimum daily, 390 ft³/s (11.0 m³/s) Jan. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	541	510	616	390	480	884	856	1320	823	608	512	494
2	573	489	568	435	396	770	815	1330	830	713	482	499
3	475	509	520	420	410	784	833	1360	855	602	526	605
4	522	560	576	430	444	932	825	1330	882	650	539	566
5	532	544	623	430	456	1430	860	1570	877	635	482	527
6	523	515	560	410	800	1760	981	1670	865	631	473	506
7	519	496	470	440	1370	1850	922	1490	814	619	480	498
8	524	487	478	396	819	1650	930	1350	784	602	489	498
9	523	487	523	483	800	1440	984	1290	770	580	489	505
10	510	484	520	444	1070	1300	909	1200	771	611	465	510
11	510	464	621	440	1060	1270	898	1120	782	616	467	514
12	510	456	601	452	1230	1150	892	1120	782	615	494	510
13	510	456	520	467	1520	1090	1000	1120	769	611	480	500
14	510	457	519	454	1240	1080	980	1150	766	593	481	490
15	510	464	554	444	1010	1110	961	1170	721	583	481	480
16	510	470	497	448	920	1150	961	1170	723	583	480	470
17	508	506	483	452	863	1090	976	1130	705	576	490	460
18	502	525	483	441	840	1050	964	1110	762	550	489	460
19	502	517	460	441	841	1000	894	1100	762	550	470	470
20	502	462	452	441	796	993	887	1080	685	569	496	490
21	501	477	485	440	759	902	893	1030	672	562	590	480
22	497	480	480	460	729	955	897	1060	662	537	586	470
23	497	461	489	440	729	944	932	1110	666	521	556	460
24	505	477	514	444	743	904	991	1090	640	550	520	450
25	511	477	564	425	808	909	1010	1040	645	553	502	440
26	506	474	527	410	847	958	1030	1050	655	537	490	440
27	504	471	497	425	936	949	1110	993	653	510	493	430
28	501	481	460	433	880	944	1190	971	640	507	519	430
29	522	562	460	416	---	919	1200	913	643	519	492	430
30	560	560	430	390	---	891	1310	860	640	519	492	420
31	507	---	410	400	---	862	---	837	---	516	493	---
TOTAL	15875	14473	16017	13321	23756	33930	28768	34126	22120	18083	15529	14500
MEAN	512	482	517	430	849	1095	959	1101	737	583	501	483
MAX	573	560	623	483	1520	1850	1310	1670	882	713	590	605
MIN	475	456	410	390	396	784	815	837	640	507	465	420
AC-FT	31490	28710	31770	26420	47120	67300	57060	67690	43880	35870	30800	28760

CAL YR 1978 TOTAL 346463 MEAN 949 MAX 2760 MIN 410 AC-FT 715900
WTR YR 1979 TOTAL 252911 MEAN 693 MAX 1850 MIN 390 AC-FT 501600

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-70, 1976 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1968 to August 1970.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	HARD-NESS (MG/L AS CACO3)
OCT , 1978										
03...	1315	294	65	7.6	8.8	0	.40	10.8	15	26
NOV										
08...	1000	497	62	7.1	6.6	5	.50	12.7	21	28
DEC										
06...	1615	637	58	7.4	4.6	5	.60	11.5	K400	22
JAN , 1979										
17...	0915	448	60	7.8	3.0	5	.60	12.5	1	23
FEB										
14...	1645	1190	56	7.2	3.4	5	5.8	13.7	35	18
MAR										
14...	0930	1080	50	7.0	6.2	5	1.6	12.1	1	20
APR										
11...	1300	900	53	--	6.8	5	.80	11.6	2	21
MAY										
09...	0845	1300	42	7.7	8.2	20	1.5	11.8	9	16
JUN										
12...	1230	703	58	7.7	11.0	5	.50	10.4	17	22
JUL										
11...	1200	E615	67	--	10.1	5	.90	10.1	23	23
AUG										
01...	0900	510	64	8.0	10.7	5	1.2	11.4	12	24
SEP										
11...	1230	514	64	7.8	9.4	5	.70	12.6	15	29

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)
OCT , 1978										
03...	2	6.0	2.7	3.8	23	.3	1.4	30	0	25
NOV										
08...	0	7.0	2.6	3.7	21	.3	1.4	36	0	30
DEC										
06...	0	5.0	2.4	3.6	25	.3	1.3	33	0	27
JAN , 1979										
17...	0	5.0	2.6	3.7	25	.3	1.2	31	0	25
FEB										
14...	3	4.3	1.8	2.8	26	.3	1.0	19	0	16
MAR										
14...	1	5.8	1.9	3.5	26	.3	.9	24	0	20
APR										
11...	0	4.6	2.2	3.2	26	.3	1.0	31	--	25
MAY										
09...	0	3.6	1.6	2.9	27	.3	1.0	20	0	16
JUN										
12...	3	4.9	2.4	3.2	33	.2	1.3	23	0	19
JUL										
11...	0	5.1	2.5	4.0	26	.4	1.4	29	--	24
AUG										
01...	0	5.0	2.7	3.7	24	.3	1.5	36	0	30
SEP										
11...	5	5.5	3.0	4.3	37	.3	1.5	--	--	24

14123500 WHITE SALMON RIVER NEAR UNDERWOOD, WA--Continued

WATER QUALITY DATA

DATE	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)	ARSENIC DIS-SOLVED (UG/L AS AS)
OCT , 1978 03...	1.2	5.6	1.5	.13	.01	.030	.01	.03	0
NOV 08...	4.6	5.0	.9	.15	.01	.040	.01	.03	0
DEC 06...	2.1	4.3	.9	.05	.01	.040	.03	.09	0
JAN , 1979 17...	.0	3.4	.9	.06	.00	.040	.01	.03	0
FEB 14...	1.9	3.9	2.1	.13	.05	.060	.02	.06	0
MAR 14...	3.0	3.9	.9	.05	.01	.020	.02	.06	0
APR 11...	--	2.6	1.0	.06	.01	.020	.01	.03	0
MAY 09...	.6	6.0	.6	.04	.00	.020	.01	.03	1
JUN 12...	.7	2.7	1.1	.06	.01	.030	.00	.00	1
JUL 11...	--	2.7	1.2	.05	.01	.100	.03	.09	0
AUG 01...	.6	4.7	1.0	.10	.00	.030	.01	.03	0
SEP 11...	--	6.9	.7	.08	.17	.020	.04	.12	0

DATE	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	LEAD, DIS-SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT , 1978 03...	0	1	0	2	6	.0	0	0	10
NOV 08...	0	1	0	2	6	.1	0	0	10
DEC 06...	3	3	0	1	24	.0	0	0	<3
JAN , 1979 17...	5	<1	0	1	3	.0	0	1	<3
FEB 14...	7	<1	0	3	20	.0	0	1	10
MAR 14...	0	0	10	0	0	.1	0	0	0
APR 11...	4	<1	0	1	7	.1	0	0	5
MAY 09...	10	110	0	1	0	.3	0	0	10
JUN 12...	0	2	10	0	20	.0	0	0	0
JUL 11...	0	1	0	0	6	.1	0	0	10
AUG 01...	20	9	0	0	13	.1	0	0	5
SEP 11...	0	0	10	3	0	.2	0	0	0

14128500 WIND RIVER NEAR CARSON, WA

LOCATION.--Samples taken at footbridge 200 ft (61 m) downstream from Little Wind River, 0.8 mi (1.3 km) downstream from gaging station and 1.2 mi (1.9 km) east of Carson.

PERIOD OF RECORD.--Water years 1973, 1976 to current year.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)
OCT , 1978							
03...	1600	195	55	7.4	10.4	0	.40
NOV							
08...	1300	344	49	6.8	8.6	5	.40
DEC							
07...	1100	954	34	7.3	3.3	5	.70
JAN , 1979							
17...	1330	333	45	7.3	2.2	5	.30
FEB							
15...	1115	2640	27	--	3.6	0	4.0
MAR							
14...	1245	1630	34	7.4	5.7	5	1.0
APR							
11...	1530	1060	36	--	10.4	5	.80
MAY							
09...	1330	1420	33	7.8	8.2	5	.90
JUN							
12...	1500	396	48	7.8	14.4	5	.80
JUL							
11...	1315	E300	55	--	14.2	0	.80
AUG							
01...	1230	184	57	8.1	16.6	5	.80
SEP							
11...	1600	202	58	8.0	13.0	5	.90

DATE	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4)
OCT , 1978							
03...	11.4	1	.02	.01	.030	.01	.03
NOV							
08...	11.5	2	.03	.01	.020	.00	.00
DEC							
07...	--	4	.06	.01	.030	.04	.12
JAN , 1979							
17...	14.6	2	.03	.00	.030	.01	.03
FEB							
15...	13.6	<1	.05	.03	.050	.01	.03
MAR							
14...	13.1	1	.02	.01	.010	.01	.03
APR							
11...	12.6	1	.02	.01	.010	.00	.00
MAY							
09...	12.4	6	.01	.00	.010	.00	.00
JUN							
12...	10.4	2	.04	.01	.020	.00	.00
JUL							
11...	10.6	1	.05	.00	.020	.04	.12
AUG							
01...	11.2	1	.02	.00	.020	.01	.03
SEP							
11...	12.4	--	.02	.01	.010	.07	.21

14128910 COLUMBIA RIVER AT WARRENDALE, OR
(National stream-quality accounting network station)

LOCATION.--Lat 45°36'45", long 122°01'35", in NE¼NE¼ sec.35, T.2 N., R.6 E., Multnomah County, Hydrologic Unit 17080001, on left bank 0.1 mi (0.2 km) downstream from Tumult Creek, 1.0 mi (1.6 km) west of Warrendale, 5.1 mi (9.2 km) downstream from Bonneville Dam, and at mile 141.0 (226.9 km).

DRAINAGE AREA.--240,000 mi² (621,600 km²), approximately.

WATER-STAGE RECORDS

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height recorded, 30.91 ft (9.421 m) June 20, 1972; minimum, 4.49 ft (1.369 m) July 10, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 18.51 ft (5.642 m) May 12; minimum, 4.73 ft (1.442 m) Sept. 29.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	9.38	8.33	8.75	9.55	8.69	9.15	13.19	11.08	11.98	8.03	6.05	6.65
2	8.67	8.06	8.39	9.89	9.12	9.41	13.18	11.09	11.69	13.20	6.80	9.57
3	10.49	8.08	8.87	10.26	9.14	9.55	11.46	10.16	10.79	14.54	11.21	12.86
4	11.51	10.47	10.96	10.48	9.66	9.98	13.89	10.38	11.51	15.26	11.38	13.05
5	11.29	9.49	10.42	10.22	9.21	9.58	14.66	12.37	13.61	15.23	10.48	12.53
6	9.87	8.79	9.45	9.71	8.94	9.29	14.42	12.39	13.12	13.24	8.12	9.60
7	9.68	8.36	8.88	9.37	8.89	9.13	14.95	12.61	13.51	7.75	5.17	6.05
8	9.07	8.29	8.61	9.71	8.94	9.43	14.80	11.77	12.48	11.46	5.73	8.08
9	9.39	8.51	8.89	9.36	8.41	8.92	11.79	8.44	9.56	12.38	7.92	9.69
10	10.51	8.81	9.52	11.98	8.40	9.65	8.40	7.06	7.75	13.23	9.68	11.54
11	10.81	9.48	9.94	12.00	9.99	10.49	12.94	7.68	9.88	13.17	10.35	11.62
12	11.89	10.15	10.93	10.14	7.69	8.70	12.77	11.00	11.87	12.95	10.45	11.58
13	11.55	8.06	9.69	12.74	7.52	9.05	13.11	10.33	11.87	12.12	9.78	10.79
14	7.98	6.24	7.07	13.13	10.76	11.60	12.36	10.27	11.21	9.81	7.78	8.50
15	8.07	6.26	7.15	13.24	10.14	11.64	13.15	10.20	11.51	12.72	7.91	10.25
16	9.11	6.72	7.90	12.56	10.08	10.82	13.06	10.11	10.97	12.54	10.56	11.44
17	9.07	8.24	8.61	10.37	9.68	10.03	10.74	9.42	10.10	11.00	9.65	10.15
18	8.96	7.68	8.27	10.01	7.44	8.78	11.74	9.79	10.82	12.21	10.79	11.55
19	10.14	7.61	8.37	7.08	6.29	6.72	12.43	9.94	10.93	11.77	11.03	11.45
20	10.58	8.79	9.63	11.21	7.35	9.05	12.47	9.84	10.98	11.12	9.21	9.77
21	10.75	8.73	10.01	12.54	9.24	10.72	11.17	9.62	10.15	9.74	8.96	9.33
22	10.77	7.44	8.52	12.42	11.05	11.85	9.99	9.39	9.69	13.34	8.87	11.00
23	9.53	7.58	8.56	11.78	7.21	9.52	9.24	7.27	8.07	14.15	12.50	13.07
24	9.74	8.58	9.06	8.38	6.32	7.40	8.42	6.73	7.59	14.01	12.95	13.51
25	8.62	7.99	8.41	8.33	7.74	8.10	8.52	6.99	7.73	14.35	12.88	13.56
26	8.88	8.37	8.66	7.78	6.18	7.11	9.64	8.28	8.87	14.82	11.29	12.75
27	9.02	8.56	8.78	13.07	7.36	9.44	13.26	9.23	10.73	13.37	8.15	10.01
28	9.60	8.54	8.99	13.30	10.44	11.66	15.55	11.83	13.74	8.59	6.73	7.62
29	9.66	8.08	8.88	11.53	9.50	10.17	15.28	12.60	13.82	13.79	7.89	9.65
30	9.26	7.52	8.36	12.33	10.29	10.94	14.98	12.79	13.44	13.71	10.95	11.89
31	9.38	8.08	8.73	---	---	---	13.32	8.07	10.08	13.84	9.75	11.74
MONTH	11.89	6.24	8.94	13.30	6.18	9.60	15.55	6.73	10.97	15.26	5.17	10.67

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	15.34	12.64	13.94	15.76	13.44	14.77	12.28	10.95	11.05	15.01	13.03	14.06
2	15.99	12.09	14.02	15.80	13.56	14.70	13.23	10.60	11.02	15.20	13.05	14.60
3	15.42	11.06	13.14	13.47	10.92	11.80	13.67	11.71	12.89	13.79	12.27	12.94
4	13.16	8.10	9.58	11.47	10.60	11.08	14.09	13.69	13.93	14.28	11.42	12.68
5	11.69	7.44	9.42	12.15	11.28	11.75	14.04	13.06	13.59	14.69	13.91	14.27
6	13.51	10.22	11.44	12.38	11.88	12.12	13.18	11.43	12.07	15.92	13.98	14.88
7	15.15	12.09	13.62	12.37	11.83	12.10	11.51	9.87	10.78	16.61	15.86	16.32
8	15.15	13.87	14.30	14.23	11.40	12.68	10.97	9.46	9.95	17.55	16.56	17.07
9	13.86	12.59	13.16	14.49	12.97	14.12	14.14	10.98	12.44	17.59	15.83	17.15
10	13.81	12.55	13.14	12.96	10.91	11.57	15.64	14.19	14.91	18.21	15.72	17.16
11	13.46	12.30	12.59	12.70	10.99	11.72	15.15	13.48	14.11	18.44	18.12	18.28
12	16.19	12.41	14.23	12.31	10.51	11.10	14.84	13.93	14.40	18.51	16.99	18.24
13	17.70	14.30	15.73	11.47	10.47	11.08	13.84	12.17	13.22	16.92	14.76	15.58
14	17.85	15.65	16.52	12.03	10.53	11.36	13.51	11.41	12.11	15.98	15.12	15.61
15	16.38	14.94	15.29	12.57	11.87	12.25	13.91	12.74	13.21	15.38	14.92	15.18
16	16.48	13.55	14.87	12.91	12.36	12.62	13.09	12.02	12.60	15.32	14.82	15.01
17	16.07	11.47	13.01	13.21	12.03	12.55	12.98	11.77	12.43	15.39	14.04	14.66
18	11.45	9.17	10.43	13.06	11.85	12.15	13.10	11.58	12.02	15.72	15.42	15.56
19	10.76	9.37	10.07	13.05	11.68	12.74	13.21	12.39	12.68	15.68	15.51	15.62
20	13.80	9.88	11.84	13.55	10.66	12.16	13.69	12.76	13.20	15.97	15.45	15.70
21	13.42	11.93	12.72	12.41	10.10	11.31	13.19	11.32	12.40	15.34	14.00	14.95
22	13.01	12.07	12.44	12.86	12.32	12.62	11.28	10.17	10.85	15.60	15.06	15.35
23	14.16	12.64	13.20	12.69	11.02	11.05	10.60	10.00	10.30	16.44	14.35	15.29
24	13.13	11.37	11.92	11.84	10.75	11.39	12.19	10.55	11.61	17.28	16.41	16.79
25	11.56	10.60	11.00	11.58	9.35	10.48	13.68	11.99	12.94	18.32	17.20	17.79
26	13.07	11.03	12.18	13.20	10.26	12.07	13.54	11.76	12.67	18.41	16.68	17.45
27	14.35	12.63	13.50	14.53	13.07	13.89	13.34	11.41	12.26	16.65	15.54	15.93
28	14.97	13.60	14.20	15.03	14.35	14.66	13.21	10.81	11.92	17.06	15.22	16.12
29	---	---	---	15.19	14.45	14.73	14.04	11.93	12.47	17.10	14.97	15.88
30	---	---	---	14.95	12.42	13.19	14.73	13.50	14.14	17.12	15.27	15.72
31	---	---	---	13.66	11.55	12.03	---	---	---	15.45	14.59	15.10
MONTH	17.85	7.44	12.94	15.80	9.35	12.41	15.64	9.46	12.53	18.51	11.42	15.70

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	16.32	15.05	15.43	9.60	8.27	9.08	9.06	7.48	8.26	7.08	5.81	6.25
2	15.28	13.91	14.27	9.86	8.10	8.52	8.45	7.17	7.94	7.11	5.91	6.51
3	14.25	11.50	12.93	9.63	8.53	9.24	9.01	7.38	8.15	7.22	5.81	6.71
4	12.47	10.44	11.27	9.56	8.88	9.28	7.54	6.21	6.81	8.09	6.58	7.16
5	14.25	12.26	12.71	9.60	8.84	9.32	7.30	5.89	6.66	8.49	6.13	7.88
6	15.27	14.27	14.75	9.73	8.87	9.32	8.88	7.14	8.21	9.06	6.70	8.10
7	14.41	12.51	13.95	9.86	7.51	8.61	9.32	8.41	8.95	9.94	8.44	9.28
8	12.48	11.69	11.93	8.56	6.78	7.51	9.51	8.41	9.12	9.58	7.00	7.98
9	11.97	10.94	11.40	9.24	7.02	8.56	9.84	9.09	9.45	8.96	6.48	7.59
10	11.63	10.74	11.11	9.55	8.27	8.85	9.65	8.86	9.18	9.04	7.75	8.58
11	13.86	11.61	12.55	11.78	8.29	9.81	8.79	6.98	7.68	9.09	8.17	8.57
12	14.41	11.68	13.01	11.79	9.91	10.74	8.00	6.19	7.10	8.53	7.70	7.98
13	12.91	11.52	12.25	10.17	8.40	9.51	8.21	6.58	7.41	7.88	6.06	6.73
14	13.30	10.60	12.13	9.69	6.98	7.66	7.40	6.29	6.72	6.95	5.98	6.51
15	13.38	11.14	11.68	7.64	6.59	7.15	8.46	6.89	7.78	6.98	5.79	6.32
16	11.16	9.16	9.99	8.81	7.63	8.35	8.58	6.57	7.56	7.38	5.63	6.48
17	9.57	8.82	9.33	9.45	8.72	9.20	7.43	6.56	6.98	7.90	6.30	7.25
18	10.96	7.82	10.30	10.35	8.84	9.48	6.68	5.40	5.98	8.16	6.61	7.63
19	10.95	10.64	10.80	11.41	9.88	10.25	6.83	5.13	6.14	7.82	6.33	7.25
20	11.95	10.85	11.40	11.20	9.40	10.26	7.56	6.06	7.03	8.23	7.28	7.77
21	---	---	---	9.19	7.11	7.83	7.78	6.63	7.15	8.18	6.05	7.17
22	---	---	---	7.64	6.64	7.10	9.26	6.65	7.62	7.81	5.66	6.68
23	---	---	---	7.76	6.55	7.11	9.35	8.39	8.91	7.98	6.18	7.07
24	---	---	---	9.26	6.80	8.51	9.25	8.75	8.99	7.92	6.57	7.41
25	---	---	---	9.75	8.77	9.26	9.19	6.71	7.85	7.54	5.69	6.59
26	---	---	---	10.96	8.98	9.68	8.07	6.06	6.79	7.80	5.53	6.66
27	---	---	---	10.51	9.02	9.82	8.91	7.64	8.11	7.76	6.44	7.31
28	12.75	11.25	11.70	9.05	6.27	7.40	10.07	8.73	9.27	7.62	5.65	6.44
29	11.39	10.15	10.66	7.41	5.65	6.47	9.94	7.91	8.45	6.38	4.73	5.49
30	11.28	9.04	9.83	9.53	7.00	7.81	8.38	5.81	7.01	6.15	4.88	5.45
31	---	---	---	8.86	7.40	7.98	6.71	5.77	6.27	---	---	---
MONTH	16.32	7.82	11.47	11.79	5.65	8.69	10.07	5.13	7.74	9.94	4.73	7.14
YEAR	18.51	4.73	10.74									

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to current year.
WATER TEMPERATURES: October 1975 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 242 micromhos May 15, 1977; minimum, 97 micromhos June 26, 27, 1978.
WATER TEMPERATURES: Maximum, 22.5°C Aug. 17, 18, 1977; minimum recorded, 2.0°C Jan. 3, 5, 1978.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 229 micromhos Feb. 27; minimum recorded, 108 micromhos June 27.
WATER TEMPERATURES: Maximum recorded, 22.0°C Aug. 22-27; minimum recorded, 0.0°C many days during winter periods.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT , 1978											
06...	1030	130000	152	7.9	16.2	1.3	9.7	<1	20	63	6
16...	1300	128000	153	7.6	15.9	2.4	9.8	<1	29	64	4
NOV											
08...	1210	139000	157	8.3	12.4	2.0	10.6	K4	K2	66	6
DEC											
06...	1200	175000	179	7.6	5.9	1.1	13.0	K2	K1	72	10
FEB , 1979											
23...	1200	196000	191	7.8	2.0	21	14.5	K3	280	83	13
MAR											
08...	1000	186000	173	8.1	4.5	25	13.1	K5	K21	79	15
APR											
09...	1100	209000	176	8.2	7.6	6.7	12.7	K5	K1	81	14
MAY											
09...	1000	257000	179	8.1	12.4	20	12.4	K5	K3	75	14
JUN											
05...	0900	213000	123	8.4	15.7	7.7	11.3	<1	K11	53	14
JUL											
19...	1200	163000	127	7.8	20.6	4.9	8.5	K2	K8	50	1
AUG											
24...	1100	134000	142	7.7	20.8	2.8	8.6	K15	K14	61	8
SEP											
20...	1030	112000	153	7.9	20.2	1.8	9.8	K5	K9	67	8

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT , 1978											
06...	18	4.3	6.0	17	.3	1.3	57	11	3.0	.1	8.3
16...	18	4.6	6.3	17	.3	1.3	60	11	3.1	.2	7.8
NOV											
08...	19	4.8	6.5	17	.3	1.2	60	13	5.9	.2	8.3
DEC											
06...	20	5.4	7.6	18	.4	1.7	62	15	6.0	.2	9.5
FEB , 1979											
23...	23	6.2	8.4	18	.4	1.4	70	19	4.5	.2	10
MAR											
08...	22	5.9	6.9	16	.3	1.5	64	19	4.1	.2	10
APR											
09...	23	5.8	6.6	15	.3	1.5	67	20	3.6	.2	10
MAY											
09...	20	6.1	7.3	17	.4	1.8	61	16	7.1	.3	12
JUN											
05...	15	3.7	4.6	16	.3	1.1	39	11	2.1	.2	7.4
JUL											
19...	14	3.7	4.2	15	.3	1.3	49	13	1.9	.2	5.6
AUG											
24...	17	4.5	4.6	19	.3	1.1	53	14	2.0	.2	6.8
SEP											
20...	19	4.7	6.2	16	.3	1.4	59	19	2.5	.2	6.4

K Results based upon colony counts outside the ideal range.

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER QUALITY DATA

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)
OCT , 1978											
06...	86	86	.12	32000	8	.12	.01	.32	.33	.10	.23
16...	93	89	.13	31600	13	.12	.01	.28	.29	.09	.20
NOV											
06...	94	95	.13	35300	0	.10	.00	.30	.30	.00	.30
DEC											
06...	106	101	.14	50100	--	.22	.01	.49	.50	.18	.32
FEB , 1979											
23...	113	115	.15	59800	--	.39	.11	.37	.48	.18	.30
MAR											
08...	111	108	.15	55700	--	.40	.04	.33	.37	.19	.18
APR											
09...	95	111	.13	53600	--	.43	.01	.22	.23	.19	.04
MAY											
09...	120	107	.16	83300	--	.33	.06	.19	.25	.07	.18
JUN											
05...	82	69	.11	47200	--	.00	.00	.27	.27	.12	.15
JUL											
19...	71	73	.10	31200	--	.02	.02	.28	.30	.20	.10
AUG											
24...	86	82	.12	31100	--	.05	.11	.08	.19	.00	--
SEP											
20...	88	95	.12	26600	--	.08	.02	2.3	2.3	1.8	.50

DATE	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1978										
06...	.45	2.0	.040	.030	--	--	--	--	--	--
16...	.41	1.8	.020	.010	--	1.6	.2	8	2720	84
NOV										
06...	.40	1.8	.030	.020	1.5	--	--	8	3000	80
DEC										
06...	.72	3.2	.000	.020	1.7	--	--	7	3310	81
FEB , 1979										
23...	.87	3.9	.180	.050	3.8	--	--	94	49700	90
MAR										
08...	.77	3.4	.060	.040	2.7	--	--	40	20100	88
APR										
09...	.66	2.9	.060	.020	--	2.2	1.0	16	9030	72
MAY										
09...	.58	2.6	.080	.020	2.8	--	--	27	18700	84
JUN										
05...	.27	1.2	.030	.030	2.9	--	--	20	11500	94
JUL										
19...	.32	1.4	.030	.030	--	2.9	1.1	12	5280	91
AUG										
24...	.24	1.1	.030	.010	1.5	--	--	8	2890	96
SEP										
20...	2.4	11	.030	.030	1.6	--	--	6	1810	94

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT , 1978										
16...	1300	1	1	0	0	30	--	--	--	0
APR , 1979										
09...	1100	1	1	0	0	0	5	3	2	10
JUL										
19...	1200	2	2	100	70	30	5	4	<1	0

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER QUALITY DATA

DATE	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)
OCT , 1978										
16...	0	0	0	0	<1	15	6	9	250	240
APR , 1979										
09...	10	0	4	4	0	14	7	7	520	460
JUL										
19...	0	0	0	0	<3	40	33	7	290	280

DATE	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG)	MERCURY DISSOLVED (UG/L AS HG)
OCT , 1978										
16...	<10	--	--	--	20	20	<1	.0	.0	.0
APR , 1979										
09...	60	29	29	0	20	10	10	.1	.1	.0
JUL										
19...	10	14	14	0	20	20	<1	.1	.0	.1

DATE	SELENIUM, TOTAL (UG/L AS SE)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)
OCT , 1978									
16...	0	0	0	0	0	0	10	5	5
APR , 1979									
09...	0	0	0	0	0	0	20	0	20
JUL									
19...	0	0	0	0	0	0	40	40	5

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	152	143	148	166	158	160	---	---	---
2	---	---	---	152	144	149	166	163	165	---	---	---
3	---	---	---	147	144	156	166	163	165	---	---	---
4	---	---	---	150	143	146	169	162	163	---	---	---
5	---	---	---	149	140	147	179	168	172	187	183	185
6	156	151	153	147	138	145	188	175	182	188	184	186
7	161	154	157	145	140	144	188	177	185	---	---	---
8	158	149	155	152	146	148	189	183	186	---	---	---
9	158	152	155	155	148	152	191	188	189	---	---	---
10	158	151	154	157	152	155	192	190	191	184	180	182
11	158	153	155	157	149	154	191	183	187	181	178	180
12	166	154	159	158	149	155	191	185	190	179	174	176
13	160	155	157	155	147	153	194	187	190	176	173	175
14	162	154	158	157	151	155	195	190	194	175	173	174
15	163	154	158	157	155	156	200	189	195	181	174	177
16	158	151	154	158	155	157	203	198	200	187	179	182
17	155	144	150	158	154	156	206	202	203	189	186	187
18	150	142	146	164	158	161	210	203	206	191	185	189
19	151	143	147	165	160	162	209	205	207	190	187	188
20	156	148	152	166	161	163	204	200	202	188	186	187
21	159	149	155	174	166	168	200	197	199	193	183	188
22	159	150	155	175	170	173	198	196	197	194	188	192
23	161	151	156	175	169	172	197	193	194	197	190	195
24	157	150	153	172	168	171	197	193	195	198	195	196
25	155	147	151	171	163	169	197	189	195	195	182	192
26	160	147	154	171	164	169	194	191	193	187	182	184
27	160	154	157	170	167	169	194	189	191	184	180	182
28	158	153	156	172	171	171	190	186	189	184	177	182
29	153	147	151	171	164	168	190	184	189	186	181	184
30	151	139	148	164	160	163	189	185	188	187	183	185
31	150	138	147	---	---	---	190	187	189	187	182	185
MONTH	166	138	154	175	138	159	210	158	189	198	173	185

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	188	175	181	224	216	220	216	213	214	190	186	188
2	187	174	181	215	201	208	213	205	209	191	185	188
3	187	182	185	205	195	201	204	198	201	191	184	188
4	189	186	188	195	185	190	197	190	193	186	182	184
5	189	184	186	185	176	179	193	183	189	182	176	179
6	187	177	184	176	172	175	188	184	186	176	172	174
7	175	168	171	180	172	176	185	178	182	177	171	174
8	173	165	169	183	173	179	181	178	180	181	172	176
9	167	161	164	186	182	184	177	175	176	183	178	180
10	162	160	162	187	179	183	178	175	177	183	177	181
11	168	161	164	191	182	186	178	175	177	182	175	179
12	169	165	167	191	185	189	179	176	177	181	174	178
13	176	166	172	195	188	191	181	175	177	179	169	175
14	186	176	180	200	191	196	180	174	178	174	164	171
15	187	185	186	200	199	200	181	177	179	172	165	170
16	187	181	184	200	194	198	182	178	180	171	164	167
17	182	176	179	197	191	195	182	177	180	167	159	163
18	175	172	174	199	188	195	182	177	181	162	153	159
19	175	167	173	201	189	196	183	178	181	159	148	154
20	178	172	175	203	191	198	189	175	183	155	146	151
21	187	176	182	202	193	199	202	186	192	150	140	146
22	191	185	187	204	194	200	202	197	200	145	143	144
23	196	190	193	208	195	203	205	196	200	144	139	142
24	202	196	199	213	204	209	203	191	195	142	137	140
25	208	202	205	214	211	213	193	182	189	142	130	136
26	219	208	213	213	210	212	190	181	186	140	137	139
27	229	219	224	210	208	209	189	184	187	141	137	139
28	227	223	225	210	208	209	190	182	187	142	138	140
29	---	---	---	212	208	210	188	180	185	142	136	140
30	---	---	---	213	210	212	189	181	185	143	133	139
31	---	---	---	216	213	214	---	---	---	143	131	138
MONTH	229	160	184	224	172	198	216	174	187	191	130	162

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	139	129	135	118	113	116	133	122	128	156	149	153
2	137	126	131	117	109	114	131	123	128	152	147	149
3	132	125	129	119	111	115	135	123	129	151	146	148
4	131	124	127	118	114	116	135	127	131	152	146	149
5	124	120	123	121	116	119	134	124	130	151	148	150
6	125	120	122	124	118	122	137	125	132	154	147	151
7	125	119	122	126	121	124	138	125	132	155	149	152
8	126	119	123	129	120	126	136	127	133	157	152	155
9	126	117	123	129	122	126	140	127	134	158	154	156
10	124	117	121	128	120	124	138	131	134	157	151	155
11	122	116	120	126	121	124	142	134	138	158	151	155
12	122	117	120	131	125	128	142	132	137	157	152	155
13	121	114	118	133	126	130	143	136	139	155	151	154
14	119	114	117	135	124	130	141	136	137	159	150	154
15	119	115	118	135	121	128	141	132	138	158	152	156
16	118	114	117	127	118	124	142	137	139	156	151	154
17	116	113	115	129	121	126	142	134	139	156	149	153
18	115	111	113	130	123	127	144	136	141	156	149	152
19	114	110	112	133	124	129	144	138	141	156	151	154
20	115	110	113	131	122	127	145	139	143	157	153	155
21	116	111	114	132	126	129	146	139	143	160	155	157
22	117	112	115	132	123	128	147	140	144	161	154	159
23	118	111	116	129	120	125	148	140	145	161	153	158
24	120	110	116	131	121	125	147	137	144	159	153	157
25	119	111	115	132	124	127	147	140	145	160	156	158
26	119	112	116	130	116	125	147	141	144	163	158	160
27	121	108	116	131	122	127	147	142	145	164	157	161
28	118	110	112	131	123	128	152	147	150	163	155	159
29	117	113	115	134	121	127	153	149	151	161	150	156
30	119	115	117	134	123	129	157	149	152	155	147	151
31	---	---	---	133	122	128	153	145	151	---	---	---
MONTH	139	108	119	135	109	125	157	122	139	164	146	155
YEAR	229	108	162									

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	12.5	12.0	12.0	6.0	6.0	6.0	---	---	---
2	---	---	---	12.5	12.0	12.0	6.0	6.0	6.0	---	---	---
3	---	---	---	12.5	12.0	12.5	6.0	6.0	6.0	---	---	---
4	---	---	---	12.5	12.0	12.5	6.0	6.0	6.0	---	---	---
5	---	---	---	12.5	11.5	12.0	6.0	5.5	6.0	1.5	1.0	1.0
6	17.0	16.0	16.5	12.5	11.0	11.5	6.0	5.5	6.0	1.0	.0	.5
7	17.0	17.0	17.0	11.5	11.0	11.5	5.5	5.0	5.5	.5	.0	.0
8	17.0	16.5	17.0	11.5	11.0	11.5	5.5	5.5	5.5	.0	.0	.0
9	17.0	16.5	17.0	11.0	10.5	11.0	5.5	5.0	5.5	.0	.0	.0
10	17.0	16.5	17.0	11.0	10.0	10.5	5.0	5.0	5.0	.0	.0	.0
11	17.0	16.5	16.5	10.0	9.5	10.0	5.0	5.0	5.0	.0	.0	.0
12	16.5	16.0	16.5	10.0	9.0	9.5	5.0	4.5	5.0	.0	.0	.0
13	16.0	15.5	16.0	9.0	8.5	9.0	4.5	4.5	4.5	.5	.0	.5
14	15.5	15.0	15.5	6.0	8.0	8.5	4.5	4.5	4.5	.5	.0	.5
15	15.5	15.5	15.5	8.5	8.0	8.5	4.5	4.0	4.5	.0	.0	.0
16	16.0	15.5	15.5	8.5	8.5	8.5	4.5	4.0	4.5	.0	.0	.0
17	16.0	15.5	15.5	8.5	8.5	8.5	4.0	4.0	4.0	.0	.0	.0
18	16.0	15.5	15.5	8.5	8.0	8.5	4.0	3.5	4.0	.5	.0	.0
19	15.5	15.5	15.5	8.0	7.0	7.5	4.0	3.5	4.0	.0	.0	.0
20	15.5	15.5	15.5	7.0	6.5	7.0	3.5	3.5	3.5	.5	.0	.0
21	14.0	15.5	15.5	7.0	6.5	6.5	3.5	3.5	3.5	.5	.0	.5
22	15.5	15.0	15.0	7.0	6.5	6.5	3.5	3.5	3.5	.5	.5	.5
23	15.0	14.5	15.0	7.0	6.5	7.0	3.5	3.5	3.5	.5	.0	.5
24	15.0	15.0	15.0	6.5	6.5	6.5	4.0	3.5	3.5	.5	.5	.5
25	15.0	14.5	14.5	6.5	6.0	6.0	3.5	3.0	3.5	1.0	.0	.5
26	14.5	14.0	14.5	6.0	6.0	6.0	3.5	3.0	3.0	1.0	.5	.5
27	14.5	14.0	14.0	6.0	6.0	6.0	3.0	3.0	3.0	1.0	.5	.5
28	14.0	13.5	14.0	6.0	6.0	6.0	3.0	2.5	3.0	1.0	.5	1.0
29	13.5	13.5	13.5	6.0	6.0	6.0	2.5	2.0	2.5	.5	.5	.5
30	13.0	13.0	13.0	6.0	5.5	6.0	2.0	1.5	2.0	.5	.5	.5
31	13.0	12.0	12.5	---	---	---	1.5	.5	1.0	2.0	.5	.5
MONTH	17.0	12.0	15.5	12.5	5.5	9.0	6.0	.5	4.5	2.0	.0	.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	.5	.0	.5	3.5	3.0	3.5	7.0	7.0	7.0	11.5	11.0	11.0
2	.5	.0	.5	3.5	3.0	3.5	7.5	7.0	7.0	11.5	11.0	11.5
3	.5	.0	.5	3.5	3.5	3.5	7.0	7.0	7.0	12.0	11.5	11.5
4	.5	.0	.5	3.5	3.5	3.5	7.5	7.0	7.0	12.0	12.0	12.0
5	.5	.5	.5	4.0	3.5	4.0	8.0	7.0	7.5	12.5	12.0	12.5
6	1.0	.5	1.0	4.5	4.0	4.0	8.0	7.5	7.5	12.5	12.0	12.5
7	1.5	1.0	1.5	5.0	4.5	4.5	8.0	7.5	7.5	12.5	12.5	12.5
8	1.5	1.5	1.5	5.0	4.5	5.0	8.0	7.5	8.0	13.0	12.5	12.5
9	2.0	1.5	1.5	5.0	4.5	5.0	7.5	7.5	7.5	13.0	12.5	13.0
10	1.5	1.5	1.5	5.0	4.5	4.5	7.5	7.5	7.5	13.0	12.5	13.0
11	1.5	1.5	1.5	5.0	4.5	5.0	8.0	7.5	7.5	13.0	12.5	13.0
12	1.5	1.5	1.5	5.5	4.5	5.0	8.0	7.5	8.0	13.0	13.0	13.0
13	1.5	1.5	1.5	5.5	5.0	5.0	8.0	8.0	8.0	13.5	13.0	13.0
14	1.5	1.5	1.5	5.5	4.5	5.0	8.0	8.0	8.0	14.0	13.0	13.5
15	1.5	1.0	1.5	5.5	5.0	5.0	8.5	8.0	8.5	14.0	13.5	13.5
16	1.5	1.0	1.0	5.5	5.0	5.5	8.5	8.5	8.5	14.0	14.0	14.0
17	1.5	1.0	1.5	5.5	5.0	5.5	8.5	8.5	8.5	14.0	14.0	14.0
18	1.5	1.5	1.5	6.0	5.5	5.5	8.5	8.5	8.5	14.0	14.0	14.0
19	2.0	1.5	2.0	6.0	5.5	6.0	9.0	8.5	8.5	14.0	14.0	14.0
20	2.0	2.0	2.0	6.5	6.0	6.0	9.0	8.5	9.0	14.5	14.0	14.0
21	2.5	1.5	2.0	6.5	6.0	6.0	9.0	9.0	9.0	14.5	14.0	14.5
22	2.5	2.0	2.5	6.5	6.0	6.5	9.0	9.0	9.0	15.0	14.5	14.5
23	2.5	2.0	2.0	6.5	6.0	6.5	9.5	9.0	9.5	15.0	14.5	14.5
24	2.5	2.5	2.5	7.0	6.5	6.5	10.0	9.5	9.5	15.0	14.5	15.0
25	3.0	2.5	2.5	7.0	6.5	7.0	10.0	9.5	10.0	15.0	14.5	14.5
26	3.0	2.5	3.0	7.0	6.5	7.0	10.0	9.5	10.0	15.0	14.5	14.5
27	3.5	3.0	3.0	7.0	6.5	7.0	10.5	10.0	10.0	15.0	14.5	14.5
28	3.5	3.0	3.5	6.5	6.5	6.5	11.0	10.5	10.5	14.5	14.5	14.5
29	---	---	---	7.0	6.5	6.5	11.0	10.5	11.0	14.5	14.0	14.5
30	---	---	---	7.0	6.5	6.5	11.5	11.0	11.0	15.0	14.5	14.5
31	---	---	---	7.0	6.5	7.0	---	---	---	15.5	15.0	15.0
MONTH	3.5	.0	1.5	7.0	3.0	5.5	11.5	7.0	8.5	15.5	11.0	13.5

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	15.5	15.0	15.0	17.5	17.5	17.5	21.5	21.0	21.0	21.5	21.0	21.5
2	15.5	15.5	15.5	17.5	17.0	17.5	21.0	21.0	21.0	21.5	21.5	21.5
3	16.0	15.5	15.5	18.0	17.5	17.5	21.0	20.5	21.0	21.5	21.5	21.5
4	16.0	15.5	15.5	18.0	18.0	18.0	21.0	20.5	21.0	21.5	21.0	21.0
5	16.0	15.5	15.5	18.5	18.0	18.0	21.0	20.5	20.5	21.0	20.5	20.5
6	15.5	15.0	15.5	18.5	18.5	18.5	21.0	20.5	20.5	21.0	20.5	21.0
7	15.5	15.0	15.0	18.5	18.5	18.5	21.0	20.5	21.0	21.0	21.0	21.0
8	15.5	15.0	15.5	19.0	18.5	18.5	21.0	21.0	21.0	21.0	21.0	21.0
9	16.0	15.5	15.5	19.0	19.0	19.0	21.5	21.0	21.0	21.5	21.0	21.0
10	16.5	16.0	16.0	19.0	19.0	19.0	21.5	21.5	21.5	21.0	21.0	21.0
11	16.5	16.0	16.5	19.0	19.0	19.0	21.5	21.0	21.5	21.0	20.5	21.0
12	16.5	16.0	16.5	19.0	18.5	19.0	21.5	21.5	21.5	21.0	20.5	20.5
13	16.5	16.0	16.0	19.0	18.5	19.0	21.5	21.0	21.5	20.5	20.0	20.0
14	16.5	16.0	16.5	19.0	19.0	19.0	21.0	21.0	21.0	20.0	20.0	20.0
15	16.5	16.0	16.5	19.5	19.0	19.0	21.0	20.5	21.0	20.5	20.5	20.5
16	16.5	16.5	16.5	19.5	19.0	19.5	21.0	20.5	21.0	21.0	20.5	20.5
17	16.5	16.0	16.5	20.5	20.0	20.0	21.5	21.0	21.5	20.5	20.5	20.5
18	16.5	16.0	16.0	20.5	20.0	20.5	21.5	21.0	21.0	20.5	20.0	20.5
19	16.0	16.0	16.0	21.0	20.5	20.5	21.5	21.0	21.5	20.5	20.5	20.5
20	16.5	16.0	16.0	21.0	21.0	21.0	21.5	21.5	21.5	20.5	20.0	20.5
21	16.5	16.0	16.0	21.0	20.5	21.0	21.5	21.5	21.5	20.0	20.0	20.0
22	16.5	16.5	16.5	20.5	20.0	20.5	22.0	21.5	21.5	20.0	20.0	20.0
23	17.0	16.5	16.5	20.0	20.0	20.0	22.0	21.5	21.5	20.0	19.5	20.0
24	17.5	17.0	17.0	20.5	20.0	20.0	22.0	21.5	21.5	19.5	19.5	19.5
25	17.5	17.0	17.5	20.0	20.0	20.0	22.0	21.5	21.5	19.5	19.0	19.5
26	17.5	17.5	17.5	20.5	20.0	20.5	22.0	22.0	22.0	19.5	19.5	19.5
27	17.5	17.5	17.5	21.0	20.5	21.0	22.0	21.5	22.0	19.5	19.0	19.0
28	18.0	17.5	18.0	21.0	20.5	20.5	22.0	21.5	21.5	19.5	19.0	19.0
29	18.0	17.5	17.5	20.5	20.5	20.5	21.5	21.5	21.5	19.5	18.0	19.0
30	17.5	17.5	17.5	21.0	20.5	20.5	21.5	21.0	21.5	19.5	18.5	19.0
31	---	---	---	21.0	20.5	21.0	21.5	21.0	21.5	---	---	---
MONTH	18.0	15.0	16.5	21.0	17.0	19.5	22.0	20.5	21.5	21.5	18.0	20.5
YEAR	22.0	.0	11.5									

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE TIME	OCT 6,78 1030	NOV 6,78 1210	MAR 8,79 1000	MAY 9,79 1000
TOTAL CELLS/ML	4300	2800	550	5000
DIVERSITY: DIVISION	0.8	1.4	0.0	0.1
.CLASS	0.8	1.4	0.0	0.1
..ORDER	1.2	1.6	0.9	1.1
...FAMILY	1.4	1.7	1.1	1.4
....GENUS	2.0	2.0	1.4	1.9

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...CHLOROCOCCACEAE								
....CHLOROCOCCUM	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE								
....PEDIASTRUM	67	2	--	-	--	-	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	25	1	66	2	--	-	--	-
....CLOSTERIOPSIS	*	0	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	*	0
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	--	-	--	-
....CRUCIGENIA	34	1	--	-	--	-	--	-
....SCENEDESMUS	84	2	89	3	--	-	--	-
....TETRASTRUM	--	-	--	-	--	-	56	1
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	22	1	--	-	28	1
...VOLVOCACEAE								
....PANDORINA	--	-	--	-	--	-	--	-
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	670#	16	66	2	190#	34	290	6
....MELOSIRA	2500#	59	1000#	37	--	-	2800#	56
....STEPHANODISCUS	*	0	66	2	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	--	-	--	-	28	1
...CYMBELLACEAE								
....CYMBELLA	--	-	--	-	--	-	*	0
....EPITHEMIA	*	0	--	-	--	-	--	-
...DIATOMACEAE								
....DIATOMA	--	-	--	-	--	-	270	5
...FRAGILARIACEAE								
....ASTERIONELLA	180	4	--	-	320#	58	1200#	24
....FRAGILARIA	75	2	--	-	14	3	150	3
....SYNEDRA	*	0	--	-	14	3	140	3
...NAVICULACEAE								
....NAVICULA	*	0	22	1	--	-	--	-
...NITZSCHIACEAE								
....NITZSCHIA	*	0	89	3	14	3	*	0
...TABELLARIACEAE								
....TABELLARIA	67	2	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
.CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
....CHROOMONAS	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....ANACYSTIS	--	-	--	-	--	-	--	-
..HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE								
....OSCILLATORIA	500	12	1300#	46	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
.EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....EUGLENA	--	-	22	1	--	-	--	-
....TRACHELOMONAS	--	-	22	1	--	-	--	-

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	JUL 19,79		AUG 24,79		SEP 20,79	
TIME	1200		1100		1030	
TOTAL CELLS/ML	1700		2500		4600	
DIVERSITY: DIVISION	0.6		1.4		1.1	
.CLASS	0.6		1.4		1.1	
..ORDER	1.4		1.8		1.4	
...FAMILY	1.4		2.1		1.4	
....GENUS	1.7		2.3		1.6	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...CHLOROCOCCACEAE						
....CHLOROCOCCUM	--	-	26	1	--	-
...HYDRODICTYACEAE						
....PEDIASTRUM	--	-	210	8	--	-
...OOCYSTACEAE						
....ANKISTRODESMUS	39	2	26	1	--	-
....CLOSTERIOPSIS	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-
...SCENEDESMACEAE						
....ACTINASTRUM	--	-	--	-	110	2
....CRUCIGENIA	--	-	--	-	--	-
....SCENEDESMUS	--	-	100	4	170	4
....TETRASTRUM	--	-	--	-	57	1
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	52	2	--	-
...VOLVOCACEAE						
....PANDORINA	--	-	--	-	230	5
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	--	-	360	15	570	12
....MELOSIRA	1000*	59	220	9	140	3
....STEPHANODISCUS	65	4	--	-	--	-
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	--	-	--	-	--	-
...CYMBELLACEAE						
....CYMBELLA	--	-	--	-	--	-
....EPITHEMIA	--	-	--	-	--	-
...DIATOMACEAE						
....DIATOMA	--	-	--	-	--	-
...FRAGILARIACEAE						
....ASTERIONELLA	13	1	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-
....SYNEDRA	13	1	--	-	--	-
...NAVICULACEAE						
....NAVICULA	--	-	--	-	--	-
...NITZSCHIACEAE						
....NITZSCHIA	--	-	26	1	29	1
...TABELLARIACEAE						
....TABELLARIA	410*	24	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)						
.CRYPTOPHYCEAE						
..CRYPTOMONADALES						
...CRYPTOCHRYSIDACEAE						
....CHROOMONAS	--	-	13	1	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....ANACYSTIS	160	9	140	6	3300*	70
..HORMOGONALES						
...NOSTOCACEAE						
....ANABAENA	--	-	--	-	57	1
...OSCILLATORIACEAE						
....OSCILLATORIA	--	-	1300*	52	--	-
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-

NOTE: * - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

14143500 WASHOUGAL RIVER NEAR WASHOUGAL, WA

LOCATION.--Lat 45°37'22", long 122°17'33", in SW¼SE¼ sec.27, T.2 N., R.4 E., Clark County, Hydrologic Unit 17080001, on right bank 0.6 mi (1.0 km) upstream from Cougar Creek, 4.0 mi (6.4 km) northeast of Washougal, and at mile 9.2 (14.8 km).

DRAINAGE AREA.--108 mi² (280 km²).

PERIOD OF RECORD.--September 1944 to current year. Chemical analyses November 1961 to September 1976.

REVISED RECORDS.--WSP 1246: 1945-47, 1949-50, 1951(P). WSP 1738: 1948(M). WDR-WA-76-1: 1963-64(M), 1965 (P), 1968(M), 1970-71(M), 1972(P), 1973-75(M), 1976(P).

GAGE.--Water-stage recorder. Altitude of gage is 175 ft (53 m), from topographic map. Prior to Dec. 1, 1961, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records excellent. Minor regulation by fish hatchery above station. Some small diversions for domestic use.

AVERAGE DISCHARGE.--35 years, 881 ft³/s (24.95 m³/s), 110.78 in/yr (2,814 mm/yr), 638,300 acre-ft/yr (787 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,400 ft³/s (1,170 m³/s) Dec. 2, 1977, gage height, 19.6 ft (5.97 m), from floodmarks, from rating curve extended above 22,000 ft³/s (623 m³/s); minimum observed, 41 ft³/s (1.16 m³/s) Sept. 18, 1958; minimum gage height, 1.51 ft (0.460 m) Sept. 27, 28, 1967.

According to a local resident, the flood of Dec. 2, 1977 exceeded all floods since 1888.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,000 ft³/s (227 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 7	0300	*17,400	493	*15.34	[illegible]	Mar. 5	0300	10,100	287	10.25	3.124

Minimum discharge, 72 ft³/s (2.04 m³/s) Aug. 29, 30, gage height, 1.79 ft (0.546 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	---	[illegible]	[illegible]	---	[illegible]	---	[illegible]	---	[illegible]	[illegible]	---
TOTAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MEAN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAX	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MIN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CFSM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
IN.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AC-FT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CAL YR 1978 TOTAL [illegible] MEAN [illegible] MAX [illegible] MIN [illegible] CFSM [illegible] IN [illegible] AC-FT [illegible]

WTR YR 1979 TOTAL [illegible] MEAN [illegible] MAX [illegible] MIN [illegible] CFSM [illegible] IN [illegible] AC-FT [illegible]

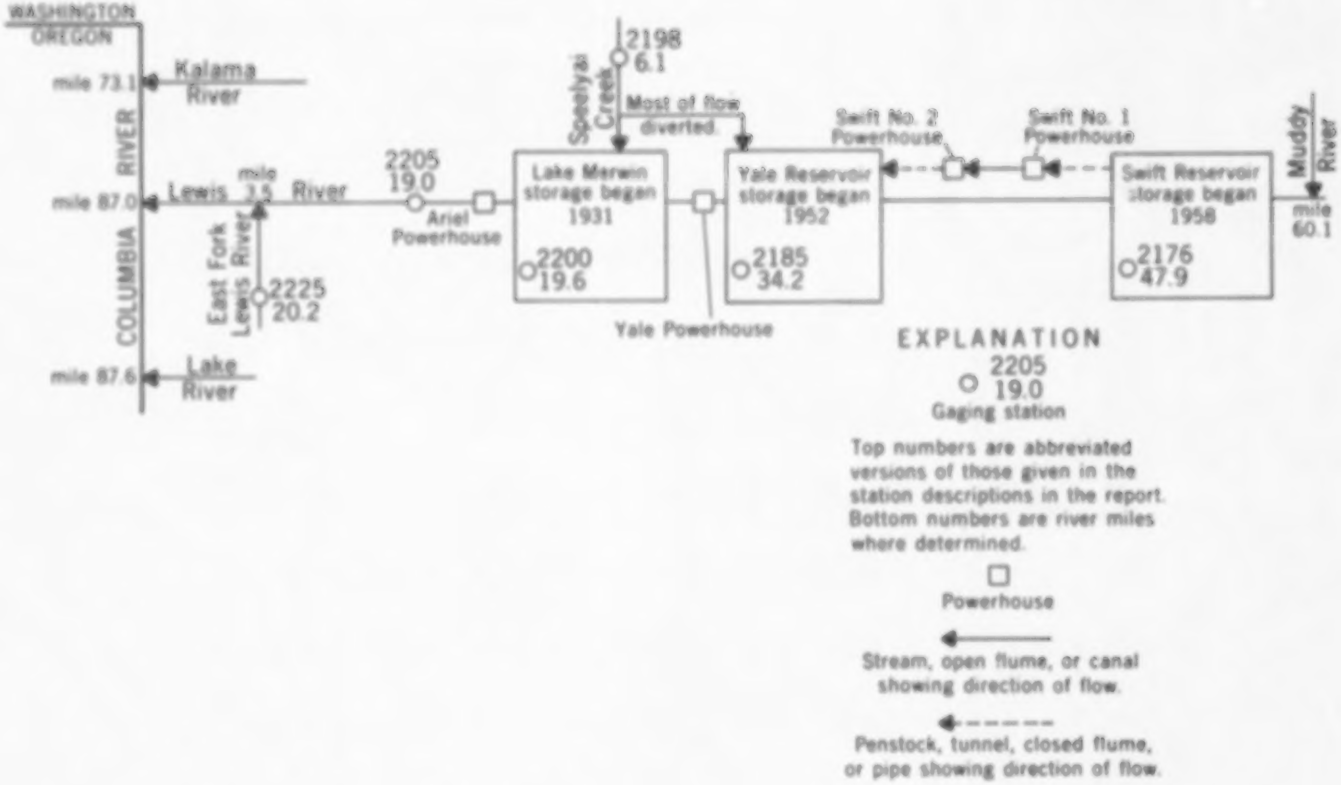
WASHINGTON
OREGON
COLUMBIA RIVER
mile 73.1
Kalama River
mile 87.0
Lewis River
mile 3.5
East Fork Lewis River
2225
20.2
mile 87.6
Lake River
2205
19.0
Ariel Powerhouse
Lake Merwin storage began 1931
2200
19.6
Speelyai Creek
2198
6.1
Most of flow diverted
Yale Powerhouse
Yale Reservoir storage began 1952
2185
34.2
Swift No. 2 Powerhouse
Swift No. 1 Powerhouse
Swift Reservoir storage began 1958
2176
47.9
Muddy River
mile 60.1
EXPLANATION
2205
19.0
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 20. Gaging stations in Lewis River basin.

14219800 SPEELYAI CREEK NEAR COUGAR, WA

LOCATION.--Lat 46°00'20", long 122°20'46", in NW¼NW¼ sec.17, T.6 N., R.4 E., Cowlitz County, Hydrologic Unit 17080002, on right bank 3.8 mi (6.1 km) southwest of Cougar and at mile 6.1 (9.8 km).

DRAINAGE AREA.--12.6 mi^2 (32.6 km^2).

PERIOD OF RECORD.--May 1959 to May 1978, October 1978 to current year.

REVISED RECORDS.--WSP 1718: 1959.

GAGE.--Water-stage recorder. Altitude of gage is 500 ft (152 m), from topographic map. Prior to Nov. 21, 1959, at site 250 ft (76 m) downstream at different datum.

REMARKS.--Records good except those above 400 ft^3/s (11.3 m^3/s), which are poor, and those for period of no gage-height record, Oct. 1-Nov. 2, Dec. 31-Feb. 4, Mar. 18-Apr. 3, May 13-June 13, which are fair. No regulation or diversion above station. Greater part of flow diverted into Yale Reservoir (see sta 14218500), 240 ft (73 m) downstream from station.

AVERAGE DISCHARGE.--19 years (water years 1960-77, 79), 106 ft^3/s (3.002 m^3/s), 114.24 in/yr (2,902 mm/yr), 76,800 acre-ft/yr (94.7 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,600 ft^3/s (102 m^3/s) probably Nov. 20, 1962 (by slope-area measurement, gage height not determined); minimum observed, 1.8 ft^3/s (0.051 m^3/s) Sept. 24-29, 1967, gage height, 0.24 ft (0.073 m).

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 700 ft^3/s (19.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Feb. 6	2400	1,110	31.4	4.59	1.399	Mar. 5	0200	*1,410	39.9	*5.08	1.548

Minimum discharge, 3.0 ft^3/s (0.085 m^3/s) Aug. 12, 13, gage height, 0.78 (0.238 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	21	333	46	26	144	65	50	20	31	4.7	5.2
2	15	19	228	41	24	118	75	55	19	21	4.7	20
3	15	66	174	37	22	134	85	54	18	17	4.7	29
4	14	110	236	36	43	685	76	76	17	15	4.5	30
5	14	71	206	31	134	984	76	168	19	14	4.5	23
6	13	49	150	29	460	600	76	200	18	13	4.2	20
7	13	41	131	27	665	420	72	196	17	12	4.0	16
8	13	61	115	25	319	277	76	176	16	11	3.7	27
9	12	49	100	24	613	203	82	146	15	11	3.7	30
10	13	43	90	45	523	170	87	118	14	13	3.5	23
11	13	40	204	41	496	146	96	98	13	11	3.2	20
12	12	36	161	38	505	123	134	82	12	11	3.2	17
13	12	33	131	36	420	114	236	72	12	10	3.5	15
14	11	31	116	34	261	113	203	64	11	9.5	5.0	13
15	11	29	90	32	180	129	165	58	11	8.9	4.7	12
16	11	78	85	30	144	123	144	52	13	8.3	5.0	12
17	11	191	78	28	144	108	132	47	12	8.0	5.7	11
18	11	146	68	27	203	98	120	43	12	7.7	5.7	9.8
19	11	120	61	29	177	90	111	40	11	7.1	9.2	9.5
20	11	96	59	45	148	84	108	37	11	6.8	7.4	9.2
21	13	80	62	64	127	78	92	34	10	6.8	6.8	8.9
22	11	67	79	57	111	73	87	32	9.5	6.8	6.8	8.6
23	11	57	90	52	104	69	93	30	9.2	6.8	5.8	8.3
24	11	50	179	48	125	65	101	28	8.9	6.5	4.7	7.7
25	11	46	159	45	172	62	90	26	8.9	6.5	4.8	7.1
26	10	42	125	42	273	60	85	26	8.9	6.2	3.7	7.1
27	10	41	101	39	242	64	82	26	8.3	5.7	3.7	6.8
28	12	47	82	36	188	60	76	27	8.8	5.5	3.4	6.8
29	34	76	68	33	---	63	71	25	8.3	5.5	3.5	6.5
30	42	236	68	30	---	60	64	23	10	5.2	4.2	6.2
31	27	---	52	28	---	60	---	21	---	5.0	5.2	---
TOTAL	444	2094	3890	1153	6799	5573	3050	2143	389.6	312.0	145.0	425.7
MEAN	14.3	69.8	126	37.2	243	180	102	69.1	13.0	10.1	4.68	14.2
MAX	42	236	333	64	665	984	236	200	20	31	9.2	30
MIN	10	19	52	24	22	60	64	21	8.3	5.0	3.2	5.2
CFSM	1.14	5.54	10.0	2.95	19.3	14.3	8.10	5.48	1.03	.80	.37	1.13
IN.	1.31	6.18	11.51	3.40	20.07	16.45	9.00	6.33	1.15	.92	.43	1.26
AC-FT	881	4150	7730	2290	13490	11050	6050	4250	772	620	288	844

WTR YR 1979 TOTAL 26426.5 MEAN 72.4 MAX 984 MIN 3.2 CFSM 5.75 IN 78.01 AC-FT 52420

RESERVOIRS IN LEWIS RIVER BASIN, WA

14217600 SWIFT RESERVOIR.--Lat 46°03'38", long 122°11'44", in NE¼SW¼ sec.28, T.7 N., R.5 E., Skamania County, Hydrologic Unit 17080002, at the intake structure near left bank on Swift Dam on Lewis River 5.0 mi (8.0 km) east of Cougar and at mile 47.9 (77.1 km). DRAINAGE AREA, 481 mi² (1,246 km²). PERIOD OF RECORD, September 1958 to current year. GAGE, water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific & Power Light Co.).

Reservoir is formed by rock and earthfill dam; storage began Sept. 29, 1958; dam completed in December 1958. Usable capacity, 446,550 acre-ft (551 hm³) between elevations 878 ft (267.6 m), lower limit for economic operation, and 1,000.5 ft (304.95 m), maximum operating limit. Dead storage unknown. Figures given herein represent total contents. Water is used by Pacific Power & Light Co. for power development. Capacity table furnished by Pacific Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 759,100 acre-ft (936 hm³) Nov. 15, 1973, elevation, 1,000.77 ft (305.035 m); minimum since reservoir was first filled, 325,100 acre-ft (401 hm³) May 1, 1967, elevation, 883.60 ft (269.321 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 755,626 acre-ft (932 hm³) July 1, elevation, 1,000.01 ft (304.803 m); minimum, 373,174 acre-ft (460 hm³) Feb. 2, elevation, 899.74 ft (274.241 m).

14218500 YALE RESERVOIR. Lat 45°57'50", long 122°19'53", in SE¼NE¼ sec.32, T.6 N., R.4 E., Clark County, Hydrologic Unit 17080002, at left end of Yale Dam on Lewis River just upstream from intake, 500 ft (152 m) upstream from powerhouse, 1.0 mi (1.6 km) upstream from Canyon Creek, 3.2 mi (5.1 km) southeast of Yale, and at mile 34.2 (55.0 km). DRAINAGE AREA, 596 mi² (1,544 km²). PERIOD OF RECORD, August 1952 to current year. Chemical analyses February 1969 to June 1971, water temperature June 1969 to June 1971, and sediment records February 1970 to September 1971. GAGE, water-stage recorder with supplementary water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.). Prior to Feb. 1, 1954, nonrecording indicator gage at same site and datum.

Reservoir is formed by rock and earthfill dam; storage began July 31, 1952, dam completed in 1952. Usable capacity, 189,530 acre-ft (234 hm³) between elevations 430 ft (131.1 m), lower limit for economic operation, and 490 ft (149.4 m), top of spillway gates. Dead storage below elevation 417 ft (127.1 m), 178,050 acre-ft (220 hm³). Figures given herein represent total contents. Water is used by Pacific Power & Light Co. for power development. Water-stage recorder graph for periods Nov. 22 to Dec. 11 and Jan. 8 to Apr. 19 and capacity table furnished by Pacific Power & Light Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 402,500 acre-ft (496 hm³) May 13, 1961, elevation, 490.15 ft (149.398 m); minimum observed since reservoir was first filled, 227,600 acre-ft (281 hm³) Feb. 22, 1957, elevation, 435.65 ft (132.786 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 400,988 acre-ft (494 hm³) July 15, 17, elevation, 489.79 ft (149.288 m); minimum, 270,722 acre-ft (334 hm³) Jan. 15, elevation, 450.69 ft (137.370 m).

14220000 LAKE MERWIN.--Lat 45°57'23", long 122°33'13", in SW¼SW¼ sec.34, T.5 N., R.2 E., Clark County, Hydrologic Unit 17080002, on left end of dam on Lewis River at Ariel and at mile 19.6 (31.5 km). DRAINAGE AREA, 730 mi² (1,890 km²). PERIOD OF RECORD, March 1931 to current year. GAGE, water-stage recorder with supplementary water-stage recorder and long distance indicator in powerhouse. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.).

Reservoir is formed by combination gravity-concrete-arch dam; some storage began March 1931; completed May 13, 1931. Usable capacity 246,000 acre-ft (303 hm³) between elevations 165 ft (50.3 m), lower limit of regulation set by Federal Power Commission, and 235 ft (71.6 m), top of spillway gates. Additional storage of 18,200 acre-ft (22.4 hm³) is provided by flashboards, elevation, 239.6 ft (73.03 m). Unused storage below elevation 165 ft (50.3 m), 159,000 acre-ft (196 hm³). Figures given herein represent total contents. Water is used by Pacific Power & Light Co. for power development. Capacity table furnished by Pacific Power & Light Co.

EXTREMES FOR PERIOD OF RECORD: Maximum contents during the period 1931-52 not determined; maximum during period 1953-79, 424,000 acre-ft (523 hm³) Jan. 24, 1959, elevation, 239.66 ft (73.109 m); minimum observed since reservoir was first filled, 164,200 acre-ft (202 hm³) Dec. 5, 1936, elevation, 166.7 ft (50.81 m).

EXTREMES FOR CURRENT YEAR: Maximum contents, 421,449 acre-ft (520 hm³) Oct. 15 and June 25, elevation, 239.26 ft (72.926 m); minimum, 376,149 acre-ft (464 hm³) Feb. 21, elevation, 227.62 ft (69.379 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre feet)	Change in contents (acre-feet)	Elevation (feet)	Contents (acre feet)	Change in contents (acre-feet)
	14217600 SWIFT RESERVOIR			14218500 YALE RESERVOIR			14220000 LAKE MERWIN		
Sept. 30	991.85	718,755	---	469.08	327,763	---	232.84	396,176	---
Oct. 31	991.25	716,055	-2,700	461.10	302,302	-25,461	232.69	395,594	-582
Nov. 30	957.57	575,353	-140,702	471.86	336,972	+34,670	236.29	409,672	+14,078
Dec. 31	914.21	419,573	-155,780	480.66	367,410	+30,438	234.22	401,546	-8,126
CAL YR 1978	----	----	-245,761	----	----	-4,872	----	----	-1,603
Jan. 31	906.92	395,824	-23,749	457.63	291,602	-75,808	233.65	399,322	-2,224
Feb. 28	947.41	536,347	+140,523	469.99	330,757	+39,155	229.13	381,906	-17,416
Mar. 31	965.20	605,630	+69,283	470.69	333,074	+2,317	235.78	407,662	+25,756
Apr. 30	990.91	714,525	+108,895	467.48	322,555	-10,519	236.02	408,608	+946
May 31	997.34	744,360	+29,835	487.12	390,969	+68,414	238.30	417,630	+9,022
June 30	999.76	754,476	+10,116	489.54	400,046	+9,077	237.30	413,665	-3,965
July 31	995.67	735,945	-18,531	484.81	382,435	-17,611	238.51	418,464	+4,799
Aug. 31	993.80	727,530	-8,415	486.74	389,558	+7,123	237.27	413,546	-4,918
Sept. 30	997.48	744,090	+16,560	473.74	343,309	-46,249	236.37	409,988	-3,55[illegible]
WTR YR 1979	----	----	+25,335	----	----	+15,546	----	----	+13,812

14220200 LEWIS RIVER AT MERWIN DAM AT ARIEL, WA

LOCATION.--Lat 45°57'21", long 122°33'20", in SE¼SE¼ sec.33, T.6 N., R.2 E., Cowlitz County, Hydrologic Unit 17080002, at bridge 500 ft (152 m) below Merwin Dam and 2,500 ft (760 m) upstream from gaging station (14220500).

DRAINAGE AREA.--731 mi² (1,893 km²).

PERIOD OF RECORD.--Water years 1977 to current year.

REMARKS.--Water discharge obtained by routing from downstream gaging station; discharge values are excellent.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	* STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT , 1978 10...	0920	1630	40	6.1	14.2	5	2.0	9.3	15	0
NOV 07...	0900	1750	43	7.0	13.1	0	2.0	9.9	16	1
DEC 05...	0845	8840	45	7.1	8.1	10	2.0	11.1	13	0
JAN , 1979 30...	0915	2760	47	7.3	--	10	1.0	13.5	14	0
FEB 21...	0900	3180	45	6.7	3.1	15	2.0	13.4	14	0
MAR 13...	0830	8680	39	7.1	4.0	20	3.0	13.1	13	3
APR 17...	0855	2950	39	7.1	5.2	15	3.0	12.6	12	0
MAY 22...	0945	3050	42	7.0	7.1	10	1.0	11.8	11	0
JUN 19...	0830	1870	38	7.1	9.1	15	2.0	11.4	15	5
JUL 10...	0915	780	40	7.1	9.8	15	3.0	11.6	13	0
AUG 07...	0905	1730	41	7.0	11.6	15	1.0	9.8	17	0
SEP 05...	0825	816	44	6.8	12.1	5	3.0	9.6	14	0

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)
OCT , 1978 10...	4.0	1.3	2.9	28	.3	.5	22	0	18
NOV 07...	4.8	.9	2.7	27	.3	.4	18	0	15
DEC 05...	3.9	.9	3.1	32	.4	.6	18	0	15
JAN , 1979 30...	4.0	1.0	3.1	32	.4	.4	21	0	17
FEB 21...	4.3	.9	3.0	30	.3	.4	19	0	16
MAR 13...	3.9	.7	2.9	33	.4	.3	12	0	10
APR 17...	3.5	.9	2.6	30	.3	.4	18	0	15
MAY 22...	2.5	1.2	2.4	31	.3	.3	17	0	14
JUN 19...	4.8	.8	2.5	25	.3	.6	13	0	11
JUL 10...	3.7	.8	2.9	40	.4	.3	17	0	14
AUG 07...	5.5	.8	2.7	25	.3	.7	21	0	17
SEP 05...	3.8	1.0	3.0	40	.4	.4	19	0	16

14220200 LEWIS RIVER AT MERWIN DAM AT ARIEL, WA--Continued

WATER QUALITY DATA

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	ARSENIC DIS- SOLVED (UG/L AS AS)
OCT , 1978									
10...	28	1.0	1.5	.03	.03	.010	.00	.00	0
NOV									
07...	2.9	4.0	1.4	.02	.01	.000	.00	.00	0
DEC									
05...	2.3	2.6	1.8	.07	.01	.020	.00	.00	1
JAN , 1979									
30...	1.7	1.2	1.9	.08	.06	.020	.01	.03	0
FEB									
21...	6.1	1.9	1.5	.14	.01	.000	.01	.03	0
MAR									
13...	1.5	2.1	1.6	.21	.02	.010	.00	.00	0
APR									
17...	2.3	1.3	1.3	.13	.01	.010	.00	.00	0
MAY									
22...	2.7	.9	1.6	.10	.02	.020	.01	.03	1
JUN									
19...	1.7	1.7	3.3	.08	.04	.030	.01	.03	2
JUL									
10...	2.2	2.6	1.2	.10	.03	.360	.03	.09	1
AUG									
07...	3.4	1.6	1.3	.05	.00	.010	.00	.00	1
SEP									
05...	4.8	3.0	1.3	.05	.01	.000	.01	.03	2

DATE	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	LEAD, DIS- SOLVED (UG/L AS PB)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT , 1978									
10...	0	0	0	2	0	.0	0	0	0
NOV									
07...	0	0	0	0	0	.0	0	0	10
DEC									
05...	4	2	0	7	0	.0	0	0	<3
JAN , 1979									
30...	2	<1	10	2	5	.0	0	0	<3
FEB									
21...	0	0	10	0	2	.0	0	0	0
MAR									
13...	100	0	0	0	5	.1	0	0	0
APR									
17...	0	<1	0	1	10	.0	0	0	<3
MAY									
22...	0	0	10	1	0	.0	0	0	10
JUN									
19...	0	0	0	0	0	.1	0	0	10
JUL									
10...	0	0	20	0	0	.4	0	0	0
AUG									
07...	0	0	10	0	0	.4	0	0	0
SEP									
05...	10	0	0	1	0	.0	0	0	0

14220500 LEWIS RIVER AT ARIEL, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 45°57'07", long 122°33'46", in NW¼NE¼ sec.4, T.5 N., R.2 E., Cowlitz County, Hydrologic Unit 17080002, on right bank 0.4 mi (0.6 km) southeast of Ariel, 0.5 mi (0.8 km) downstream from Ariel Dam and powerplant, 3.3 mi (5.3 km) upstream from Cedar Creek, and at mile 19.0 (30.6 km).

DRAINAGE AREA.--731 mi² (1,893 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July to October 1909, November 1909 (gage heights only), July to October 1922, July 1923 to current year. Published as "near Ariel" water years 1922-29. Prior to October 1952, discharge measurements made at site 0.5 mi (0.8 km) downstream; low discharges not equivalent due to local inflow.

REVISED RECORDS.--WSP 884: 1938. WSP 984: 1936-37, 1940-42. WSP 1318: 1924-30(M).

GAGE.--Water-stage recorder. Datum of gage is 44.0 ft (13.41 m) National Geodetic Vertical Datum of 1929 (levels by Pacific Power and Light Co.) July to November 1909, nonrecording gage at site 4 mi (6.4 km) upstream at different datum. July 27 to Oct. 28, 1922, and July 31, 1923, to Apr. 20, 1930, nonrecording gages at site 0.5 mi (0.8 km) downstream at datums 3.90 ft (1.189 m) and 0.90 ft (0.274 m) higher, respectively, than present datum.

REMARKS.--Water-discharge records excellent. No diversion above station. Flow regulated by Swift and Yale Reservoirs and Lake Merwin (see stations 14217600, 14218500, 14220000).

AVERAGE DISCHARGE.--56 years (water years 1924-79), 4,860 ft³/s (137.6 m³/s), 90.29 in/yr (2.293 mm/yr), 3,521,000 acre-ft/yr (4,340 hm³/yr), adjusted for storage in Lake Merwin Reservoir since March 1931, Yale Reservoir since August 1952, and Swift Reservoir since October 1958.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 129,000 ft³/s (3,650 m³/s) Dec. 22, 1933, gage height, 35.0 ft (10.67 m), from floodmarks, from rating curve extended above 56,000 ft³/s (1,590 m³/s) on basis of computation of peak flow over dam; no flow at times June 30, July 1-3, 6-9, 1931 (caused by regulation during construction of Ariel Dam); minimum daily, 1 ft³/s (0.028 m³/s) July 6, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,600 ft³/s (334 m³/s) Nov. 15, gage height, 7.62 ft (2.323 m); minimum, 601 ft³/s (17.0 m³/s) Jan. 24, gage height, 0.63 ft (0.192 m); minimum daily discharge, 785 ft³/s (22.2 m³/s) July 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	949	1400	7190	10600	8340	2990	6120	2880	1970	1270	1680	834
2	939	1740	4140	7190	9170	1950	6070	2900	1970	2570	1700	848
3	937	1750	8600	4550	5200	865	3320	2900	2020	2900	1700	845
4	1180	1750	8750	4090	3200	2410	3080	2900	2060	2880	1710	845
5	1160	1750	8700	5510	842	5750	3070	2870	2100	2580	1720	902
6	1130	1550	9890	6160	849	11000	3090	2870	2090	1690	1700	3100
7	1110	1780	9640	6000	3550	10700	3110	4610	2090	1250	1710	3140
8	1030	1830	9370	6440	4000	8260	3120	6160	2090	1100	1390	3160
9	1080	1510	9390	8470	2970	2160	3140	6190	2090	967	844	3150
10	1090	1830	9430	8600	2930	1450	3120	6230	2090	795	845	3060
11	2930	1790	9490	7030	3200	1760	3090	5940	2100	785	820	2750
12	2240	1760	9300	2670	5660	4170	2970	3160	1960	793	841	2910
13	1250	4080	6830	958	8820	7910	3000	3020	1850	803	846	2930
14	985	6810	6860	1480	8850	7360	2980	2980	1850	801	820	2940
15	2110	8540	9650	2360	8150	7560	2970	3020	1850	799	827	2970
16	1670	5260	8930	830	7720	7740	2980	4050	1850	800	824	2710
17	1690	6340	8750	1030	6090	8480	2940	5310	1850	802	842	2160
18	1730	6270	8380	817	4450	8460	2950	5310	1850	805	846	2620
19	2300	7910	8360	841	6590	6100	2970	5380	1780	1370	845	2590
20	1990	6160	8190	850	3760	5870	2910	5420	1680	2970	829	1060
21	1720	6580	4170	857	3790	6140	2910	4640	1520	2980	837	861
22	1690	4960	3220	1080	4800	6140	2910	3840	1370	2970	825	852
23	1710	3800	1200	864	5880	7260	2930	3810	1360	2980	821	843
24	1720	2950	1200	840	5530	5720	2900	2980	1360	2950	829	843
25	1710	4950	1200	898	4700	5670	2910	3020	1370	2960	822	852
26	1720	7750	1220	1260	7370	7400	3000	3810	1360	2980	833	852
27	1720	8110	1250	2290	8630	7060	3010	3900	1200	2890	837	843
28	1730	5320	1220	2310	6260	5940	2940	2980	1120	1730	841	852
29	1740	6340	4340	4650	---	5090	2930	2930	1110	1690	840	852
30	1750	4790	9670	3800	---	6140	2930	2500	1110	1690	848	852
31	1760	---	8790	7400	---	6100	---	2170	---	1690	830	---
TOTAL	49070	127440	211400	112813	149501	182585	96370	117480	52070	56320	32510	54020
MEAN	1583	4248	6819	3639	5339	5890	3212	3790	1736	1817	1049	1801
MAX	2930	8540	9890	10600	9170	11000	6120	6230	2100	2980	1720	3160
MIN	937	1400	1200	817	842	865	2900	2170	1110	785	820	834
AC-FT	97330	252800	419300	223800	296500	362200	191100	233000	103300	111700	64480	107200
†	-28,743	-91,954	-133,468	-101,781	+162,262	+97,356	+99,322	+107,271	+15,228	-31,343	-6,210	-33,247
MEAN‡	1,115	2,703	4,647	1,984	8,263	7,473	4,882	5,533	1,992	1,307	947	1,243
CFSM‡	1.53	3.70	6.36	2.71	11.3	10.2	6.68	7.57	2.73	1.79	1.30	1.70
IN‡	1.76	4.12	7.33	3.13	11.77	11.79	7.45	8.73	3.04	2.06	1.49	1.90
AC-FT‡	68,590	160,800	285,800	122,000	458,800	459,600	290,400	340,300	118,500	80,360	58,270	73,950

CAL YR 1978:	TOTAL	1,425,012	MEAN	3,904	MAX	9,890	MIN	808	AC-FT	2,827,000
DO......:	MEAN‡	3,557	CFSM‡	4.86	IN‡	66.05	AC-FT‡	2,575,000		
WTR YR 1979:	TOTAL	1,241,585	MEAN	3,402	MAX	11,000	MIN	785	AC-FT	2,463,000
DO......:	MEAN‡	3,478	CFSM‡	4.76	IN‡	64.59	AC-FT‡	2,518,000		

† Change in contents, Lake Merwin, and Swift and Yale Reservoirs.
‡ Adjusted for change in contents.

14220500 LEWIS RIVER AT ARIEL, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-63, April to September 1979.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1950 to September 1963.

WATER QUALITY DATA APRIL TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
APR , 1979											
11...	1100	3140	34	6.9	5.2	1.2	12.5	<1	7	13	0
MAY											
08...	1200	6170	30	6.6	6.2	2.1	11.7	<1	1	12	0
JUN											
05...	1100	2090	36	7.2	8.5	.90	11.4	2	<1	14	0
JUL											
11...	1500	807	37	6.9	13.4	.90	11.0	<1	3	12	0
AUG											
22...	1100	834	43	6.5	16.0	.20	10.3	--	3	13	6
SEP											
20...	0930	861	42	6.7	13.2	1.2	9.2	<1	2	13	1

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
APR , 1979											
11...	3.6	.9	2.5	30	.3	.2	13	1.9	2.1	.1	14
MAY											
08...	3.5	.7	2.4	30	.3	.4	14	1.7	1.4	.1	13
JUN											
05...	4.1	.8	2.5	28	.3	.4	14	2.1	1.4	.1	12
JUL											
11...	3.5	.9	2.4	28	.3	.7	13	2.5	1.4	.1	14
AUG											
22...	3.9	.9	2.7	29	.3	.6	7	8.0	4.1	.0	4.8
SEP											
20...	3.9	.9	2.7	36	.3	.4	12	3.7	2.4	.1	16

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
APR , 1979										
11...	1100	0	3	0	0	<2	0	0	<1	10
JUL										
11...	1500	0	1	0	0	<2	1	0	3	0

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)
APR , 1979										
11...	10	0	0	0	<3	8	5	3	150	130
JUL										
11...	0	10	0	0	<3	8	6	2	100	90

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)
APR , 1979										
11...	20	12	12	0	20	20	4	1.5	1.5	.0
JUL										
11...	10	10	10	0	10	1	9	.1	.1	.0

14220500 LEWIS RIVER AT ARIEL, WA--Continued

WATER QUALITY DATA

DATE	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
APR , 1979 11...	0	0	0	0	0	0	20	0	20
JUL 11...	0	0	0	0	0	0	20	10	9

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)
APR , 1979 11...	32	33	.04	271	.13	.02	.03	.05	.00	.05
MAY 08...	33	32	.04	550	.10	.01	.07	.08	.02	.06
JUN 05...	39	32	.05	220	.06	.03	.04	.07	.00	.11
JUL 11...	39	33	.05	85.0	.09	.00	.06	.06	.00	.09
AUG 22...	36	29	.05	81.1	.05	.08	.31	.39	.22	.17
SEP 20...	41	38	.06	95.3	.06	.01	.33	.34	.06	.28

DATE	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
APR , 1979 11...	.18	.80	.000	.010	--	1.1	--	2	17	87
MAY 08...	.18	.80	.000	.000	.8	--	--	2	33	82
JUN 05...	.13	.58	.010	.010	1.1	--	--	1	5.6	92
JUL 11...	.15	.66	.010	.010	--	.8	.2	1	2.2	--
AUG 22...	.44	1.9	.000	.000	1.2	--	--	1	2.3	87
SEP 20...	.40	1.8	.010	.010	1.7	--	--	1	2.3	100

14220500 LEWIS RIVER AT ARIEL, WA--Continued

WATER QUALITY DATA

DATE	TIME	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPO-SURE (DAYS)
MAY , 1979						
08...	1200	1.73	2.05	.140	.000	27

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	MAY 8,79	JUN 5,79	AUG 22,79	SEP 19,79
TIME	1200	1100	1100	0930
TOTAL CELLS/ML	960	170	0	1700
DIVERSITY: DIVISION	0.8	0.0	0.0	0.3
.CLASS	0.8	0.0	0.0	0.3
..ORDER	1.5	0.6	0.0	0.3
...FAMILY	1.5	0.8	0.0	0.3
....GENUS	1.6	1.4	0.0	0.3

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...OOCYSTACEAE								
....OOCYSTIS	130	14	--	-	--	-	--	-
..TETRASPORALES								
...PALMELLACEAE								
....SPHAEROCYSTIS	610#	64	--	-	--	-	--	-
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	120	12	260#	15	--	-	14	1
....MELOSIRA	14	2	1200#	69	--	-	55	3
..PENNALES								
...ACHNANTHACEAE								
....COCCONEIS	--	-	13	8	--	-	--	-
...FRAGILARIACEAE								
....FRAGILARIA	87	9	--	-	--	-	--	-
....SYNEDRA	--	-	13	8	--	-	--	-
...NAVICULACEAE								
....NAVICULA	--	-	--	-	--	-	14	1
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..HORMOGONALES								
...OSCILLATORIACEAE								
....LYNGBYA	--	-	--	-	--	-	1600#	95

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

14222500 EAST FORK LEWIS RIVER NEAR HEISSON, WA

LOCATION.--Lat 45°50'13", long 122°27'54", in NE¼NW¼ sec.17, T.4 N., R.3 E., Clark County, Hydrologic Unit 17080002, on right bank 60 ft (18 m) downstream from Basket Creek, 1.5 mi (2.4 km) northeast of Heisson, 3.4 mi (5.5 km) southwest of Yacolt, and at mile 20.2 (32.5 km).

DRAINAGE AREA.--125 mi^2 (325 km^2).

PERIOD OF RECORD.--September 1929 to current year. Water temperatures June 1950 to August 1972.

GAGE.--Water-stage recorder. Datum of gage is 366.8 ft (111.80 m) National Geodetic Vertical Datum of 1929 (from river-profile survey).

REMARKS.--Records good. No regulation or diversion above station.

AVERAGE.--50 years, 757 ft^3/s (21.44 m^3/s) 82.24 in/yr (2,089 mm/yr), 548,400 acre-ft/yr (676 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft^3/s (547 m^3/s) Dec. 2, 1977, gage height, 12.95 ft (3.947 m); minimum, 29 ft^3/s (0.82 m^3/s) Nov. 3, 1935, Sept. 27, 28, 1967; minimum gage height, 0.04 ft (0.012 m) Nov. 3, 1935.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,100 ft^3/s (173 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Feb. 7	0200	*8,140	231	*8.97	2.734	Mar. 5	0300	6,720	190	8.26	2.518

Minimum discharge, 57 ft^3/s (1.61 m^3/s) Aug. 11, 12, 13, gage height, 0.36 ft (0.110 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	135	2840	400	210	1390	444	506	202	381	67	74
2	113	123	1790	350	200	1140	526	471	194	280	68	232
3	108	351	1400	320	190	1280	614	433	184	206	70	345
4	105	984	2750	290	600	3250	602	574	178	178	68	330
5	98	546	2180	260	1580	5630	634	1540	192	159	67	220
6	96	372	1450	240	3170	4010	666	1780	186	146	65	180
7	95	295	1070	220	5500	2870	614	1500	178	136	64	141
8	95	626	845	210	2610	2000	602	1310	164	127	63	182
9	94	518	765	200	3190	1500	666	1100	156	126	62	234
10	97	412	694	369	3030	1200	670	915	149	149	61	176
11	95	342	1660	321	2880	1010	760	770	144	126	60	151
12	92	297	1320	310	2900	880	968	670	140	129	59	129
13	88	262	1010	292	2780	785	1400	610	135	116	59	113
14	83	236	915	282	1980	710	1090	562	132	108	66	102
15	83	222	800	265	1480	750	925	518	130	102	69	97
16	84	354	694	250	1250	730	855	475	146	95	69	96
17	85	955	638	238	1200	674	860	422	157	90	78	91
18	82	790	566	228	1500	606	860	390	166	88	71	85
19	79	845	496	242	1300	554	800	366	167	85	98	82
20	86	618	468	426	1090	506	710	342	159	84	112	83
21	100	503	562	447	935	482	658	321	141	83	88	80
22	84	433	694	450	830	454	626	310	130	88	77	79
23	80	381	960	412	870	436	650	300	124	88	68	78
24	82	345	1630	384	1100	419	725	287	120	83	66	76
25	79	318	1340	348	1400	408	646	262	113	82	62	71
26	76	295	1010	321	2020	396	634	252	109	79	61	70
27	76	287	830	312	2090	416	654	260	103	76	59	71
28	80	650	682	287	1730	447	638	265	102	75	59	76
29	262	1130	590	260	---	436	578	252	101	78	60	71
30	262	2760	520	240	---	447	542	220	129	72	63	69
31	162	---	450	220	---	422	---	214	---	70	85	---
TOTAL	3223	16385	33619	9394	49615	36238	21617	18197	4431	3785	2144	3884
MEAN	104	546	1084	303	1772	1169	721	587	148	122	69.2	129
MAX	262	2760	2840	450	5500	5630	1400	1780	202	381	112	345
MIN	76	123	450	200	190	396	444	214	101	70	59	69
CFSM	.83	4.37	8.67	2.42	14.2	9.35	5.77	4.70	1.18	.98	.55	1.03
IN.	.96	4.88	10.00	2.80	14.77	10.78	6.43	5.42	1.32	1.13	.64	1.16
AC-FT	6390	32500	66680	18630	98410	71880	42880	36090	8790	7510	4250	7700

CAL YR 1978 TOTAL 206969 MEAN 567 MAX 2840 MIN 68 CFSM 4.54 IN 61.59 AC-FT 410500
WTR YR 1979 TOTAL 202532 MEAN 555 MAX 5630 MIN 59 CFSM 4.44 IN 60.27 AC-FT 401700

14222550 EAST FORK LEWIS RIVER NEAR DOLLAR CORNER, WA

LOCATION.--Lat 45°48'53", long 122°35'21", in NE¼SW¼ sec.20, T.4 N., R.2 E., Clark County, Hydrologic Unit 17080002, at county bridge 0.8 mi (1.3 km) upstream from Mill Creek, 2.4 mi (3.9 km) north of Dollar Corner, and at mile 10.2 (16.4 km).

DRAINAGE AREA.--154 mi² (399 km²).

PERIOD OF RECORD.--Water years 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from upstream gaging station; discharge value is good.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color and specific conductance data furnished by Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM COBALT UNITS)	TURBIDITY (NTU)
OCT , 1978 10...	1030	100	43	7.2	13.1	20	1.0
NOV 07...	0955	328	41	7.2	6.6	15	2.0
DEC 05...	0940	2890	32	6.8	5.7	25	3.0
JAN , 1979 30...	1045	255	37	7.7	--	10	1.0
FEB 21...	1000	1090	34	7.3	4.7	20	2.0
MAR 13...	0950	890	32	7.0	6.6	10	1.0
APR 17...	0955	949	33	7.4	7.5	15	3.0
MAY 22...	1100	339	39	7.4	14.0	15	1.0
JUN 19...	0925	162	47	7.4	12.9	15	1.0
JUL 10...	1020	183	49	7.5	17.0	5	2.0
AUG 07...	1005	63	60	7.6	18.2	15	2.0
SEP 05...	1000	249	49	6.9	14.0	25	2.0

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1978 10...	10.9	.11	.02	.020	.01	.03
NOV 07...	12.1	.42	.01	.000	.00	.00
DEC 05...	12.9	.56	.03	.030	.00	.00
JAN , 1979 30...	14.5	.41	.06	.010	.00	.00
FEB 21...	12.8	.44	.01	.000	.01	.03
MAR 13...	12.4	.32	.01	.010	.00	.00
APR 17...	12.4	.28	.01	.010	.00	.00
MAY 22...	10.5	.25	.05	.010	.00	.00
JUN 19...	10.7	.15	.04	.010	.00	.00
JUL 10...	10.2	.14	.01	.010	.00	.00
AUG 07...	9.6	.05	.00	.030	.00	.00
SEP 05...	10.1	.47	.06	.010	.01	.03

14223600 KALAMA RIVER ABOVE SPENCER CREEK, NEAR KALAMA, WA

LOCATION.--Lat 46°02'51", long 122°50'11", in SE¼NW¼ sec.32, T.7 N., R.1 W., Cowlitz County, Hydrologic Unit 17080003, on right bank at Modrow Road bridge, 0.6 mi (1.0 km) upstream from Spencer Creek, 2.1 mi (3.4 km) north of Kalama city limits, and at mile 2.8 (4.5 km).

DRAINAGE AREA.--202 mi² (325 km²), approximately.

PERIOD OF RECORD.--Water years 1970 to current year (see REMARKS).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May to November 1970, July 1971 to September 1979 (discontinued).

INSTRUMENTATION.--Water temperature recorder since May 1970.

REMARKS.--Temperature records collected at this site prior to October 1973 are published in Water Resources Data for Oregon, Part 2. October 1972 to September 1973, published as 14223510 "below Cedar Creek."

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21.5°C Aug. 12, 1977; minimum, 0.0°C Dec. 7-13, 1972, Jan. 9, 1973, Jan. 6-10, 1977, Jan. 5-8, Feb. 1-3, 1979.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 20.5°C July 17-19; minimum recorded, Jan. 5-8, Feb. 1-3.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.5	11.5	12.0	6.0	5.5	5.5	7.0	6.5	7.0	---	---	---
2	12.0	10.5	11.0	6.5	5.0	5.5	7.0	6.5	6.5	---	---	---
3	11.5	10.0	11.0	8.5	6.5	7.5	7.0	7.0	7.0	---	---	---
4	11.5	10.5	11.0	9.0	7.5	8.5	7.0	6.0	6.5	1.5	1.5	1.5
5	11.5	10.5	11.0	7.0	6.5	6.5	6.0	5.0	5.5	1.5	.0	.5
6	11.5	10.0	11.0	7.0	6.0	6.5	5.0	4.0	4.5	.0	.0	.0
7	12.0	11.0	11.5	8.0	6.5	7.0	4.0	3.0	3.5	.5	.0	.0
8	12.5	11.5	12.0	9.0	8.0	8.5	4.0	3.0	3.5	1.5	.0	1.0
9	12.0	12.0	12.0	8.0	5.5	7.0	5.0	4.0	4.5	2.5	1.5	2.0
10	12.5	11.5	12.0	5.5	3.5	4.5	6.0	5.0	5.0	3.0	2.5	3.0
11	12.5	11.5	12.0	3.5	2.5	3.0	6.5	5.5	6.0	3.5	3.0	3.0
12	11.5	10.0	10.5	2.5	1.5	2.0	5.5	4.5	5.0	4.0	3.5	4.0
13	10.0	9.0	9.5	2.0	1.0	1.5	4.5	3.5	4.0	4.0	4.0	4.0
14	10.0	8.5	9.0	2.0	1.0	1.5	5.5	4.0	4.5	4.0	3.5	4.0
15	10.5	9.5	10.0	3.5	1.5	2.0	5.5	4.5	5.0	4.0	3.5	3.5
16	11.0	10.5	10.5	5.5	3.5	4.5	4.5	4.0	4.5	4.0	3.5	4.0
17	12.0	11.0	11.5	6.0	5.5	6.0	5.0	4.5	5.0	3.5	2.5	3.0
18	11.5	10.5	11.0	6.0	6.0	6.0	5.0	4.5	4.5	2.5	2.0	2.5
19	10.5	10.0	10.5	6.0	3.5	5.0	4.5	3.5	4.0	3.5	2.5	3.0
20	11.0	10.0	10.5	3.5	3.0	3.5	---	---	---	5.0	3.5	4.5
21	10.0	9.0	9.5	3.0	2.5	3.0	---	---	---	5.5	5.0	5.5
22	9.0	8.0	8.5	3.0	2.5	3.0	---	---	---	---	---	---
23	8.5	8.0	8.5	3.5	2.5	3.0	---	---	---	---	---	---
24	9.5	8.5	9.0	4.5	3.5	4.0	---	---	---	---	---	---
25	9.0	7.5	8.5	4.5	4.0	4.0	---	---	---	---	---	---
26	7.5	6.5	7.0	4.5	4.0	4.5	---	---	---	---	---	---
27	7.5	6.5	7.0	4.5	3.5	4.0	---	---	---	---	---	---
28	7.0	6.5	7.0	5.5	4.5	5.0	---	---	---	---	---	---
29	7.5	7.0	7.0	6.5	5.5	6.0	---	---	---	---	---	---
30	7.5	7.0	7.0	7.0	6.5	7.0	---	---	---	---	---	---
31	7.0	6.0	6.5	---	---	---	---	---	---	---	---	---
MONTH	12.5	6.0	10.0	9.0	1.0	5.0	7.0	3.0	5.0	5.5	.0	2.5

14223600 KALAMA RIVER ABOVE SPENCER CREEK, NEAR KALAMA, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	.0	.0	.0	5.5	4.5	5.0	6.5	6.0	6.0	---	---	---
2	.0	.0	.0	5.5	4.5	5.0	7.0	6.0	6.5	---	---	---
3	1.0	.0	.0	6.0	5.0	6.0	6.0	6.0	6.0	---	---	---
4	2.0	1.0	1.5	6.5	5.5	6.0	7.0	6.0	6.5	---	---	---
5	3.5	2.0	3.0	6.5	5.5	6.0	9.0	6.5	8.0	---	---	---
6	4.5	3.5	4.0	7.5	6.5	7.0	9.0	7.0	8.0	---	---	---
7	5.0	4.0	4.5	7.0	6.5	6.5	7.5	6.5	7.0	---	---	---
8	6.0	5.0	5.0	6.5	5.0	6.0	7.5	6.5	7.0	8.5	7.5	8.0
9	6.0	5.5	5.5	6.5	5.0	6.0	7.0	6.0	6.5	9.5	8.0	8.5
10	5.5	5.0	5.5	7.0	5.5	6.5	6.0	5.5	6.0	8.5	7.5	8.0
11	6.0	5.5	5.5	7.0	6.0	6.5	7.0	6.0	6.5	10.0	8.0	9.0
12	6.5	5.5	6.0	7.0	6.5	6.5	6.5	6.0	6.5	10.5	9.5	10.0
13	6.5	5.5	6.0	7.0	5.5	6.5	6.5	6.0	6.5	11.5	10.0	11.0
14	5.5	4.5	4.5	7.5	6.5	7.0	7.0	6.0	6.5	12.5	11.0	11.5
15	4.5	4.0	4.5	8.0	6.5	7.0	7.0	6.5	6.5	12.5	11.5	12.0
16	5.0	4.5	4.5	6.5	6.0	6.5	7.0	6.5	7.0	12.0	11.0	11.5
17	5.5	4.5	5.0	6.5	6.0	6.0	7.0	6.5	6.5	12.0	10.0	11.0
18	6.0	5.5	5.5	7.0	6.0	6.5	7.0	6.0	6.5	12.5	11.0	11.5
19	6.0	5.5	5.5	7.0	6.0	6.5	7.0	6.0	6.5	12.5	10.5	11.5
20	5.5	4.5	5.0	7.0	6.5	6.5	8.0	6.0	7.5	12.5	11.0	11.5
21	5.5	5.0	5.0	7.0	6.5	6.5	---	---	---	14.0	11.0	12.5
22	5.5	5.0	5.5	7.0	6.0	6.5	---	---	---	13.0	11.0	12.0
23	5.5	5.0	5.0	7.5	6.5	7.0	---	---	---	12.0	10.5	11.5
24	5.5	5.0	5.0	7.5	7.0	7.0	---	---	---	13.5	11.0	12.0
25	6.5	5.5	6.0	7.5	6.5	7.0	---	---	---	15.0	11.5	13.0
26	6.5	5.5	6.0	6.5	6.0	6.5	---	---	---	14.0	12.0	13.0
27	6.0	5.0	5.5	7.0	6.5	6.5	---	---	---	12.0	10.5	11.5
28	5.0	4.5	5.0	7.5	6.5	7.0	---	---	---	11.0	9.5	10.5
29	---	---	---	6.5	6.0	6.5	---	---	---	12.0	9.0	10.5
30	---	---	---	6.5	6.0	6.5	---	---	---	13.5	10.0	11.5
31	---	---	---	6.5	6.0	6.0	---	---	---	15.0	11.0	12.5
MONTH	6.5	.0	4.5	8.0	4.5	6.5	9.0	5.5	6.5	15.0	7.5	11.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	16.0	12.0	14.0	---	---	---	19.0	18.0	18.5	15.0	14.5	14.5
2	17.0	12.5	14.5	---	---	---	18.0	16.5	17.5	14.5	13.5	14.0
3	17.5	13.5	15.5	---	---	---	17.5	16.0	16.5	14.0	13.0	13.5
4	16.5	14.0	15.5	---	---	---	17.5	15.5	16.5	14.0	12.5	13.0
5	15.5	13.5	14.5	---	---	---	17.5	15.0	16.5	13.0	12.0	12.5
6	14.0	11.5	12.5	---	---	---	18.0	15.0	16.5	14.0	12.0	13.0
7	14.0	10.5	12.5	---	---	---	18.0	15.5	16.5	15.5	12.5	14.0
8	15.5	11.5	13.5	---	---	---	18.0	15.5	17.0	15.5	14.0	14.5
9	16.5	12.5	14.5	---	---	---	18.5	16.0	17.0	14.0	13.0	13.5
10	17.0	13.5	15.0	16.0	15.0	15.5	18.5	16.5	17.5	14.5	12.5	13.5
11	17.0	13.5	15.0	15.5	14.0	14.5	18.5	16.0	17.5	14.5	11.5	13.0
12	16.0	13.0	14.5	15.5	13.0	14.0	19.0	16.0	17.5	14.5	11.5	13.0
13	15.0	12.5	14.0	16.5	13.0	15.0	17.0	15.0	16.0	14.5	12.0	13.5
14	13.5	11.5	12.5	17.5	14.0	16.0	15.0	14.0	14.5	15.0	12.5	14.0
15	13.0	11.5	12.5	18.5	15.0	17.0	16.5	13.5	15.0	14.5	14.0	14.5
16	12.5	11.0	11.5	19.5	16.0	18.0	17.5	15.5	16.5	14.5	13.5	14.0
17	11.5	10.5	11.0	20.5	17.5	19.0	17.5	16.0	16.5	14.5	13.0	14.0
18	12.0	10.5	11.0	20.5	18.0	19.5	16.0	14.5	15.0	14.5	13.0	14.0
19	13.0	12.0	12.0	20.5	18.0	19.5	14.5	14.0	14.5	14.5	14.0	14.5
20	13.5	11.0	12.0	20.0	18.0	19.0	15.5	13.5	14.5	15.5	14.5	15.0
21	14.5	11.0	13.0	19.0	16.5	17.5	15.5	14.5	15.0	15.0	14.0	14.5
22	14.5	11.5	13.0	17.0	15.5	16.0	16.5	14.5	15.5	14.5	13.5	14.0
23	16.5	12.0	14.5	17.0	15.0	16.0	15.5	14.5	15.0	13.5	12.5	13.0
24	---	---	---	17.0	15.5	16.5	16.5	14.0	15.0	13.0	12.0	12.5
25	---	---	---	18.0	16.0	17.0	16.5	14.5	15.5	13.5	12.5	13.0
26	---	---	---	19.0	16.5	17.5	17.5	15.5	16.5	14.5	13.0	13.5
27	---	---	---	18.0	16.5	17.5	17.0	16.0	16.5	14.0	12.5	13.0
28	---	---	---	17.0	15.5	16.5	16.5	14.5	15.5	13.5	12.5	13.0
29	---	---	---	17.0	14.5	16.0	15.5	15.0	15.5	---	---	---
30	---	---	---	18.5	15.5	17.0	15.0	14.0	14.5	---	---	---
31	---	---	---	19.5	17.0	18.0	15.5	13.5	14.5	---	---	---
MONTH	17.5	10.5	13.5	20.5	13.0	17.0	19.0	13.5	16.0	15.5	11.5	13.5
YEAR	20.5	.0	9.5									

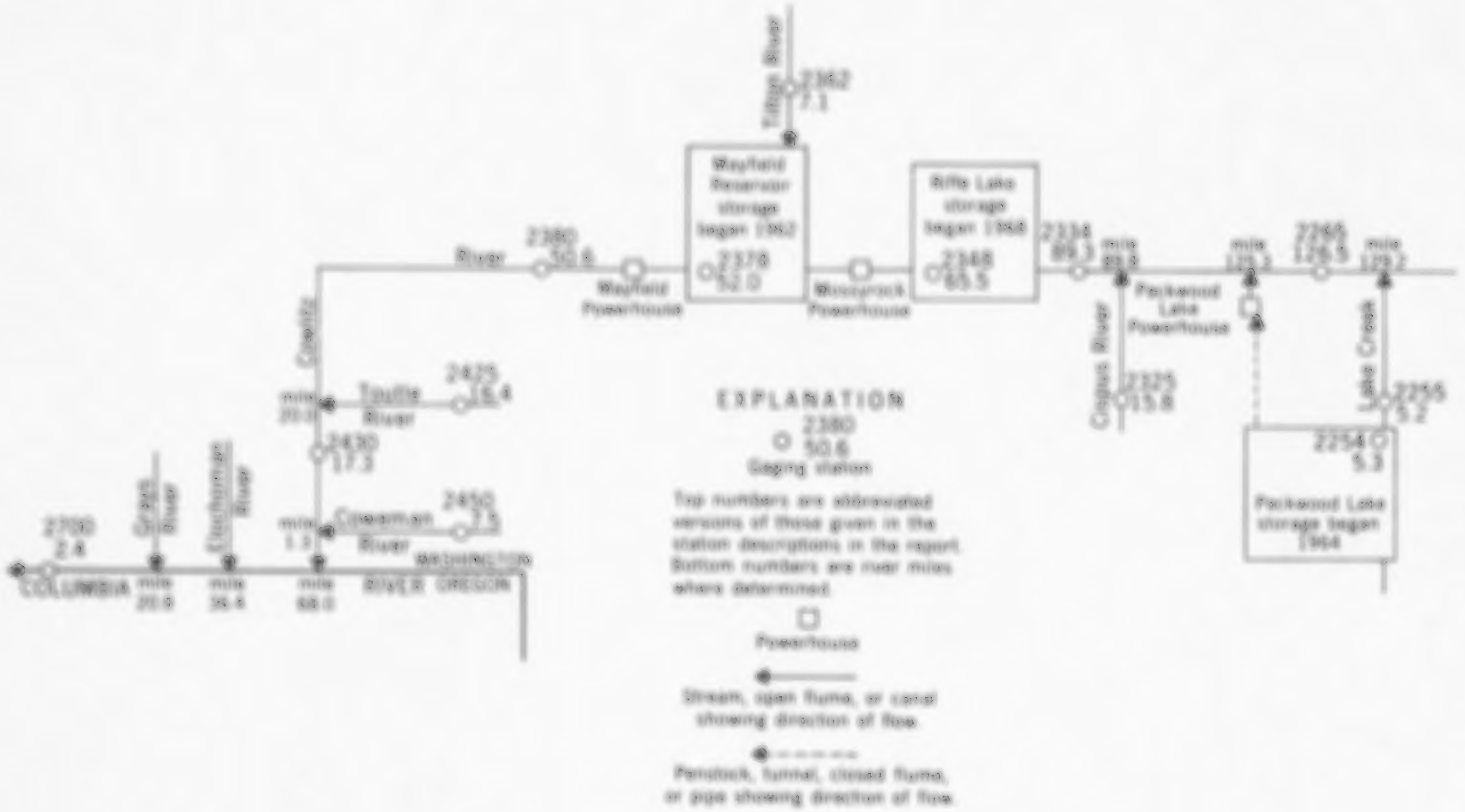
Tilton River
2362
7.1
Wayfield
Reservoir
storage
began 1962
2370
52.0
Riffe Lake
storage
began 1968
2348
65.5
Wayfield
Powerhouse
Mossyrock
Powerhouse
2380
50.6
River
Cowlitz
2334
89.3
mile
88.8
Packwood
Lake
Powerhouse
Cispus River
2325
15.8
mile
125.3
2266
126.5
mile
129.2
Lake Creek
2255
5.2
2254
5.3
Packwood Lake
storage began
1964
mile
20.0
Toutle
River
2425
16.4
2430
17.3
mile
1.3
Coweeman
River
2450
7.5
2700
2.4
Grays
River
Elochoman
River
COLUMBIA
mile
20.0
mile
36.4
mile
68.0
RIVER
WASHINGTON
OREGON
EXPLANATION
2380
50.6
Gaging station
Top numbers are abbreviated versions of those given in the station descriptions in the report. Bottom numbers are river miles where determined.
Powerhouse
Stream, open flume, or canal showing direction of flow.
Penstock, tunnel, closed flume, or pipe showing direction of flow.

Figure 21. Gaging stations in Cowlitz River basin and downstream to mouth of Columbia River.

[illegible] PACKWOOD LAKE NEAR PACKWOOD, WA

LOCATION.--Lat [illegible], long [illegible], in [illegible] sec.[illegible], T.[illegible] N., R.[illegible] E. (unsurveyed), Lewis County, Hydrologic Unit [illegible], Gifford Pinchot National Forest, at lake outlet [illegible] mi ([illegible] km) east of Packwood and at mile [illegible] ([illegible] km).

DRAINAGE AREA.--[illegible] mi² ([illegible] km²).

PERIOD OF RECORD.--August [illegible] to current year. Chemical analyses September [illegible] to October [illegible].

REVISED RECORDS.--WSP [illegible]: [illegible], drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Washington Public Power Supply System from Corps of Engineers bench mark). Prior to Sept. [illegible], [illegible], at site on north side of lake [illegible] ft ([illegible] m) east of outlet at same datum.

REMARKS.--Reservoir is formed by low concrete dam at lake outlet completed during October [illegible]. Draft from the lake for continuous power generation began June [illegible], [illegible]. Regulation of lake elevations between [illegible] ft ([illegible] m) and [illegible] ft ([illegible] m) is allowed by stipulation of Federal Power Commission. Elevation of lake maintained between [illegible] ft ([illegible] m) and [illegible] ft ([illegible] m) during the summer season for forestry and fisheries protection and retention of natural scenic effect. No regulation or diversion above lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, [illegible] ft ([illegible] m) Dec. [illegible], [illegible]; minimum, [illegible] ft ([illegible] m) Sept. [illegible], [illegible].

EXTREMES FOR CURRENT YEAR.--Maximum elevation, [illegible] ft ([illegible] m) Sept. [illegible]; minimum, [illegible] ft ([illegible] m) Sept. [illegible].

ELEVATION, IN FEET NGVD, WATER YEAR OCTOBER [illegible] TO SEPTEMBER [illegible]
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	----	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	----	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	----	[illegible]	[illegible]	----	[illegible]	----	[illegible]	----	[illegible]	[illegible]	----
MEAN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAX	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MIN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CAL YR [illegible] MEAN [illegible] MAX [illegible] MIN [illegible]
WTR YR [illegible] MEAN [illegible] MAX [illegible] MIN [illegible]

[illegible] LAKE CREEK NEAR PACKWOOD, WA

LOCATION.--Lat [illegible], long [illegible], in NW¼ sec.[illegible], T.[illegible] N., R.[illegible] E. (unsurveyed), Lewis County, Hydrologic Unit [illegible], Gifford Pinchot National Forest, on left bank [illegible] ft ([illegible] m) downstream from outlet of Packwood Lake, [illegible] mi ([illegible] km) east of Packwood and at mile [illegible] ([illegible] km).

DRAINAGE AREA.--[illegible] mi² ([illegible] km²).

PERIOD OF RECORD.--September [illegible] to September [illegible] (published as "at outlet of Packwood Lake, near Lewis"), September [illegible] to October [illegible], October [illegible] to May [illegible], August [illegible] to current year.

REVISED RECORDS.--WSP [illegible]: [illegible]. WSP [illegible]: [illegible]. WSP [illegible]: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is [illegible] ft ([illegible] m) National Geodetic Vertical Datum of 1929 (levels by Washington Public Power Supply System from Corps of Engineers bench mark). Prior to Aug. [illegible], nonrecording gages at several sites at or within [illegible] ft ([illegible] m) of present site at various datums. Aug. [illegible], to Sept. [illegible], water-stage recorder at site [illegible] ft ([illegible] m) upstream at different datum.

REMARKS.--Records good except those less than [illegible] ft³/s ([illegible] m³/s), which are poor. Since June 1, [illegible], flow regulated by continuous operation of the powerplant which controls and diverts the outflow of the lake. Water diverted for power generation is not returned to Lake Creek.

AVERAGE DISCHARGE.--[illegible] years (water years [illegible]), [illegible] ft³/s ([illegible] m³/s), [illegible] in/yr ([illegible] mm/yr), [illegible] acre-ft/yr ([illegible] hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, [illegible] ft³/s ([illegible] m³/s) Dec. [illegible], gage height, [illegible] ([illegible] m); probably no flow at times during October [illegible].

EXTREMES FOR CURRENT YEAR.--Maximum discharge, [illegible] ft³/s ([illegible] m³/s) Feb. [illegible], gage height, [illegible] ft ([illegible] m); minimum, [illegible] ft³/s ([illegible] m³/s) Mar. [illegible], gage height, [illegible] ft ([illegible] m); minimum daily [illegible] ft³/s ([illegible] m³/s) Nov. [illegible], Mar. [illegible].

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER [illegible] TO SEPTEMBER [illegible]
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	---	[illegible]	[illegible]	---	[illegible]	---	[illegible]	---	[illegible]	[illegible]	---
TOTAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MEAN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAX	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MIN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AC-FT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CAL YR [illegible] TOTAL [illegible] MEAN [illegible] MAX [illegible] MIN [illegible] AC-FT [illegible]
WTR YR [illegible] TOTAL [illegible] MEAN [illegible] MAX [illegible] MIN [illegible] AC-FT [illegible]

14226500 COWLITZ RIVER AT PACKWOOD, WA

LOCATION.--Lat 46°36'07", long 121°40'41", in SW¼SE¼ sec.16, T.13 N., R.9 E., Lewis County, Hydrologic Unit 17080004, on left bank on downstream side of Forest Service bridge, 0.6 mi (1.0 km) northwest of Packwood, 0.8 mi (1.3 km) upstream from Skate Creek, and at mile 126.5 (203.5 km).

DRAINAGE AREA.--287 mi² (743 km²).

PERIOD OF RECORD.--July 1911 to December 1919, September 1929 to current year. Published as "at Lewis" 1911-19. Water temperatures, November 1970 to April 1971.

REVISED RECORDS.--WSP 884: 1936. WSP 1346: 1916-18(M), 1934. WSP 1638: 1947(P).

GAGE.--Water-stage recorder. Datum of gage is 1,048.0 ft (319.43 m) National Geodetic Vertical Datum of 1929 (Bureau of Public Roads bench mark). July 1, 1911, to Dec. 31, 1919, nonrecording gages at site about 1 mi (1.6 km) upstream at different datums. Sept. 30, 1929, to Jan. 1, 1930, nonrecording gage at present site and datum.

REMARKS.--Records good except those for period July 17 to Sept. 18, which are fair. Minor regulation by Packwood Lake (see sta 14225000) beginning June 1964. Small diversions for domestic use. Tacoma City Light radio telemeter at site. Water is diverted from Packwood Lake for power generation and is discharged into Cowlitz River about 1 mi (1.6 km) downstream from this station, monthly mean diversion, in cubic feet per second, for the current water year as furnished by the Washington Power Supply System, is as follows:

October	20.6	January	52.4	April	24.7	July	98.9
November	61.6	February	48.6	May	171	August	67.3
December	55.6	March	74.9	June	149	September	80.1

AVERAGE DISCHARGE.--56 years, (water years 1912-19, 1930-79), 1,632 ft³/s (46.22 m³/s), 1,182,000 acre-ft/yr (1,460 hm³/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,600 ft³/s (1,037 m³/s) Dec. 21, 1933, gage height, 13.0 ft (3.96 m); maximum gage height, 13.73 ft (4.185 m) Dec. 2, 1977; minimum discharge, 130 cfs (3.68 m³/s) Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 7,500 ft³/s (212 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 6	1030	*6,200	176	*6.86	2.091

Minimum discharge, 292 ft³/s (8.27 m³/s) Nov. 1, 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	---	[illegible]	[illegible]	---	[illegible]	---	[illegible]	---	[illegible]	[illegible]	---
TOTAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MEAN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAX	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MIN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CFSM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
IN.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AC-FT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CAL YR 1978 TOTAL [illegible] MEAN [illegible] MAX [illegible] MIN [illegible] CFSM [illegible] IN [illegible] AC-FT [illegible]
WTR YR 1979 TOTAL [illegible] MEAN [illegible] MAX [illegible] MIN [illegible] CFSM [illegible] IN [illegible] AC-FT [illegible]

14232500 CISPUS RIVER NEAR RANDLE, WA

LOCATION.--Lat 46°26'50", long 121°51'46", in NW¼ sec.18, T.11 N., R.8 E. (unsurveyed), Lewis County, Hydrologic Unit 17080004, Gifford Pinchot National Forest, on left bank 60 ft (18 m) upstream from bridge to Tower Rock ranger station, 4.1 mi (6.6 km) downstream from North Fork, 8.0 mi (12.9 km) southeast of Randle, and at mile 15.8 (25.4 km).

DRAINAGE AREA.--321 mi² (831 km²).

PERIOD OF RECORD.--October 1910 to February 1912, September 1929 to current year. Water temperatures May 1950 to September 1972.

REVISED RECORDS.--WSP 794: 1934. WSP 1288: Drainage area. WSP 1935: 1950-53, 1954(M), 1955-56, 1957(M) 1960.

GAGE.--Water-stage recorder. Datum of gage is 1,221.60 ft (372.344 m) National Geodetic Vertical Deum of 1929. Prior to Mar. 1, 1912, nonrecording gage at site 1 mi (1.6 km) upstream at different datum. Sept. 28, 1929, to Nov. 26, 1949, Oct. 1-24, 1950, water-stage recorder at site 450 ft (137 m) upstream at datum 0.26 ft (0.079 m) higher.

REMARKS.--Records good. No regulation or diversion above station. Tacoma City Light radio telemeter at station.

AVERAGE DISCHARGE.--51 years (water years 1911, 1930-79), 1,337 ft³/s (37.86 m³/s) 56.56 in/yr (1,437 mm/yr), 968,700 acre-ft/yr (1,190 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,700 ft³/s (615 m³/s) Jan. 15, 1974, gage height, 12.58 ft (3.834 m), from rating curve extended above 8,700 ft³/s (246 m³/s) on basis of slope-area measurement of peak flow; minimum, 183 ft³/s (5.18 m³/s), Dec. 30, 1936; minimum gage height, 2.55 ft (0.777 m) Oct. 25, 1962, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	0715	*4,080	116	6.31	1.923	Mar 5	1715	4,030	114	*6.50	1.981

Minimum discharge, 208 ft³/s (5.89 m³/s) Feb. 2, gage height, 2.96 ft (0.902 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	----	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	----	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	----	[illegible]	[illegible]	----	[illegible]	----	[illegible]	----	[illegible]	[illegible]	----
TOTAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MEAN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAX	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MIN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CFSM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
IN.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AC-FT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CAL YR 1978 TOTAL [illegible] MEAN [illegible] MAX [illegible] MIN [illegible] CFSM [illegible] IN [illegible] AC-FT [illegible]
WTR YR 1979 TOTAL [illegible] MEAN [illegible] MAX [illegible] MIN [illegible] CFSM [illegible] IN [illegible] AC-FT [illegible]

14233400 COWLITZ RIVER NEAR RANDLE, WA

LOCATION.--Lat 46°28'13", long 122°05'51", in NE¼ sec.6, T.11 N., R.6 E., Lewis County, Hydrologic Unit 17080005, on right bank 0.5 mi (0.8 km) downstream from Cispus River, 8.1 mi (13.0 km) southwest of Randle, and at mile 89.3 (143.7 km).

DRAINAGE AREA.--1,030 mi² (2,668 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1947 to current year. Prior to October 1967, published as "near Kosmos". Records published for both sites October 1967 to September 1968. Monthly discharge only for some period published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 799.42 ft (243.663 m), revised, National Geodetic Vertical Datum of 1929. Prior to Dec. 3, 1948, nonrecording gage at site 0.9 mi (1.4 km) downstream at different datum. Dec. 3, 1948 to September 1967, at site 1.4 mi (2.3 km) downstream at datum 40.13 ft (12.232 m), corrected, lower (levels by city of Tacoma).

REMARKS.--Water-discharge records excellent. Minor regulation by Packwood Lake (14225400) beginning June 1964. Small diversions for domestic use and irrigation above station.

AVERAGE DISCHARGE.--32 years, 5,008 ft³/s (141.8 m³/s) 66.05 in/yr (1,678 mm/yr), 3,628,000 acre-ft/yr (4,470 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 89,300 ft³/s (2,530 m³/s) Dec. 3, 1977, gage height, 26.54 ft (8.089 m); minimum, 518 ft³/s (14.7 m³/s) Nov. 29, 1952, gage height, 2.34 ft (0.713 m), site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 16,000 ft³/s (453 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 7	1245	*23,400	[illegible]	*13.[illegible]	4.16[illegible]

Minimum discharge, 945 ft³/s (26.8 m³/s) Sept. 30, gage height, 6.17 ft (1.881 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	[illegible]	[illegible]	[illegible]	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	[illegible]	[illegible]	[illegible]	---	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	---	[illegible]	[illegible]	---	[illegible]	---	[illegible]	---	[illegible]	[illegible]	---
TOTAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MEAN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAX	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MIN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CFSM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
IN.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AC-FT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CAL YR 1978 TOTAL [illegible] MEAN [illegible] MAX [illegible] MIN [illegible] CFSM [illegible] IN [illegible] AC-FT [illegible]
WTR YR 1979 TOTAL [illegible] MEAN [illegible] MAX [illegible] MIN [illegible] CFSM [illegible] IN [illegible] AC-FT [illegible]

14233400 COWLITZ RIVER NEAR RANDLE, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: November 1952 to August 1968, April 1969 to current year.

INSTRUMENTATION.--Temperature recorder November 1952 to August 1968, April 1969 to current year.

REMARKS.--Interruptions in the record due to malfunctions of the instrument. Records represent water temperature at sensor within 0.1°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 19.0°C Aug. 1, 6, 1977; minimum, freezing point on many days during winter months.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 16.5°C July 20, 26-27, 31, Aug. 1; minimum, freezing point on many days during winter months.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978 17...	1455	1100	66	7.5	11.0	3.0	11.4	12	.02
NOV 07...	1500	1830	50	7.6	6.0	2.0	11.6	10	.05
DEC 05...	1435	5770	45	7.4	3.6	6.0	12.5	13	.12
JAN , 1979 11...	1100	1690	50	7.4	1.0	1.0	12.9	9	.08
FEB 08...	1500	2130	56	7.4	3.0	2.0	12.0	8	.03
MAR 08...	1000	14500	35	7.1	5.4	25	12.4	640	.13
APR 11...	1715	3770	53	7.5	6.6	1.0	11.6	2	.05
MAY 08...	1630	7600	28	7.0	7.6	4.3	11.3	4	.05
JUN 05...	1555	7400	35	7.2	10.3	5.0	10.0	460	.05
JUL 10...	0915	2200	43	7.2	13.7	5.0	9.9	23	.08
AUG 07...	0945	1610	5[illegible]	7.0	16.6	11	10.7	75	.07
SEP 11...	0915	1360	56	7.2	12.1	8.0	10.6	24	.17

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	SEDI-MENT, SUS-PENDED (MG/L)
OCT , 1978 17...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	---
NOV 07...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8
DEC 05...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	58
JAN , 1979 11...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1
FEB 08...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14
MAR 08...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1100
APR 11...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5
MAY 08...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	---	32
JUN 05...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	42
JUL 10...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17
AUG 07...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	87
SEP 11...	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10

14235400 COWLITZ RIVER NEAR RANDLE, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.0	11.0	11.5	6.0	5.0	5.5	5.0	4.5	4.5	.0	.0	.0
2	11.5	10.0	11.0	6.0	5.0	5.5	5.0	5.0	5.0	.0	.0	.0
3	11.5	9.5	10.5	7.5	6.0	6.5	5.5	5.0	5.0	.5	.0	.0
4	11.5	9.5	10.5	7.5	6.5	7.0	5.5	4.0	5.0	1.0	.5	.5
5	11.0	9.5	10.5	6.5	5.0	5.5	4.0	3.5	3.5	.5	.0	.0
6	11.0	9.5	10.5	5.5	4.5	5.0	3.5	3.0	3.5	.0	.0	.0
7	11.5	10.5	11.0	7.0	5.5	6.0	3.0	2.5	2.5	.0	.0	.0
8	12.0	10.5	11.5	8.0	7.0	7.5	2.5	2.0	2.5	1.0	.0	.5
9	11.5	10.5	11.0	7.0	5.0	6.0	3.5	2.5	3.5	2.5	1.0	2.0
10	11.5	11.0	11.0	5.0	3.0	4.0	4.0	3.5	3.5	2.5	2.0	2.0
11	12.0	11.0	11.0	2.5	1.5	2.0	4.0	4.0	4.0	3.0	2.0	2.5
12	11.0	9.5	10.0	2.0	1.0	1.5	4.0	3.0	3.5	3.5	3.0	3.5
13	10.0	9.0	9.5	2.0	1.0	1.5	3.0	2.5	2.5	4.0	3.5	4.0
14	10.5	9.0	9.5	2.0	1.0	1.5	3.0	2.5	3.0	3.5	3.5	3.5
15	10.5	9.0	10.0	2.5	1.5	2.0	---	---	---	3.5	3.0	3.5
16	10.5	10.0	10.5	---	---	---	---	---	---	3.5	3.5	3.5
17	11.0	10.0	10.5	---	---	---	---	---	---	3.5	3.0	3.0
18	11.0	10.0	10.5	---	---	---	---	---	---	3.0	2.0	2.5
19	11.0	9.5	10.5	---	---	---	---	---	---	3.5	2.5	3.0
20	10.5	9.5	10.5	---	---	---	---	---	---	4.5	3.5	4.0
21	9.5	8.5	9.0	---	---	---	---	---	---	4.5	4.0	4.5
22	8.5	8.0	8.5	---	---	---	---	---	---	4.0	3.0	3.0
23	8.5	7.5	8.0	---	---	---	---	---	---	3.0	2.5	3.0
24	10.0	8.5	9.0	---	---	---	---	---	---	3.5	3.0	3.5
25	9.0	8.0	8.5	---	---	---	---	---	---	4.0	3.0	3.5
26	8.0	6.5	7.5	---	---	---	---	---	---	3.0	2.5	2.5
27	7.5	6.5	7.0	---	---	---	---	---	---	3.0	2.0	2.5
28	7.5	7.0	7.5	4.5	3.5	4.0	2.0	.5	1.0	3.0	2.5	3.0
29	7.5	7.0	7.0	5.0	4.5	4.5	.0	.0	.0	2.5	1.5	2.0
30	7.5	6.5	7.0	5.0	5.0	5.0	.0	.0	.0	1.5	.5	1.0
31	6.5	5.5	6.0	---	---	---	.0	.0	.0	1.0	.0	.5
MONTH	12.0	5.5	9.5	8.0	1.0	4.5	5.5	.0	3.0	4.5	.0	2.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	.5	.0	.5	4.5	4.0	4.0	5.5	5.0	5.5	8.5	6.5	7.5
2	.5	.0	.5	4.5	3.5	4.0	6.0	5.5	5.5	8.0	6.5	7.0
3	.5	.5	.5	4.5	4.0	4.5	6.0	5.5	6.0	8.5	7.0	8.0
4	2.0	.5	1.5	5.5	4.5	5.0	6.5	5.5	6.0	8.5	7.0	7.5
5	3.5	2.0	3.0	5.5	5.0	5.0	---	---	---	7.0	6.5	6.5
6	3.5	3.0	3.0	5.0	4.5	5.0	---	---	---	7.0	6.0	6.5
7	3.0	2.0	2.5	5.5	4.5	5.0	---	---	---	7.0	6.0	6.5
8	4.0	3.0	3.5	5.5	4.0	4.5	---	---	---	7.5	6.5	7.0
9	4.0	4.0	4.0	5.5	4.5	5.0	---	---	---	7.5	7.0	7.5
10	4.0	4.0	4.0	6.0	4.5	5.0	---	---	---	8.0	7.0	7.5
11	4.5	4.0	4.0	6.0	5.0	5.5	---	---	---	9.5	7.5	8.5
12	4.5	4.5	4.5	6.5	6.0	6.0	6.5	5.5	6.0	9.0	8.5	9.0
13	4.5	4.5	4.5	6.5	5.5	6.0	6.0	6.0	6.0	10.5	8.5	9.5
14	4.5	3.5	4.0	6.5	5.5	6.0	6.5	6.0	6.0	10.0	8.5	9.5
15	4.0	3.0	3.5	7.0	6.0	6.5	6.5	6.0	6.5	10.0	8.5	9.0
16	4.0	3.5	3.5	6.0	5.5	6.0	8.5	8.5	8.5	9.5	8.0	8.5
17	4.0	4.0	4.0	6.0	5.5	6.0	8.5	8.0	8.5	9.5	7.5	8.5
18	---	---	---	6.5	6.0	6.0	8.5	8.0	8.5	9.5	8.5	9.0
19	---	---	---	6.5	5.5	6.0	---	---	---	9.5	7.5	8.5
20	---	---	---	6.5	5.5	6.0	---	---	---	10.0	8.5	9.0
21	---	---	---	6.5	6.0	6.5	---	---	---	10.0	8.5	9.5
22	---	---	---	7.0	5.5	6.5	---	---	---	10.0	9.0	9.5
23	---	---	---	7.0	6.0	6.5	---	---	---	10.0	8.5	9.0
24	4.0	4.0	4.0	7.0	6.0	6.5	---	---	---	10.5	9.0	9.5
25	5.0	4.0	4.5	7.0	6.0	6.5	---	---	---	10.5	8.5	9.5
26	5.0	5.0	5.0	6.5	5.5	6.0	8.5	8.0	8.0	10.5	8.5	9.5
27	5.0	4.5	4.5	6.5	6.0	6.0	8.5	8.0	8.0	8.5	7.5	7.5
28	4.5	4.0	4.0	6.5	5.5	6.0	8.0	8.0	8.0	7.5	6.5	7.0
29	---	---	---	6.5	6.0	6.0	8.0	7.0	8.0	8.5	7.0	8.0
30	---	---	---	6.5	5.5	6.0	8.0	7.0	8.0	10.0	7.5	9.0
31	---	---	---	6.0	5.5	5.5	---	---	---	11.0	9.5	10.5
MONTH	5.0	.0	3.5	7.0	3.5	5.5	8.5	5.0	7.0	11.0	6.0	8.5

14233400 COWLITZ RIVER NEAR RANDLE, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.0	10.5	11.5	10.5	9.5	10.0	18.5	15.5	17.5	15.0	14.5	15.0
2	12.0	11.0	11.5	11.0	9.0	10.0	18.0	15.5	17.0	14.5	13.0	13.5
3	12.0	10.5	11.0	13.0	10.5	12.0	17.0	15.0	16.5	12.5	11.5	12.0
4	11.5	10.0	11.0	14.0	12.5	13.5	16.5	14.0	15.5	13.0	11.5	12.5
5	11.0	9.5	10.5	15.5	13.0	14.0	16.5	14.0	15.5	12.5	11.5	12.0
6	10.0	8.5	9.0	14.5	13.5	14.0	16.5	14.0	15.5	14.0	11.5	12.5
7	10.5	8.0	9.0	14.0	13.0	13.5	17.0	14.5	16.0	15.5	13.0	14.5
8	11.5	9.5	10.5	14.5	12.5	13.5	17.0	14.5	16.0	15.5	14.5	15.0
9	12.5	11.0	11.5	15.0	14.0	14.5	17.0	14.5	16.0	14.5	13.0	13.5
10	12.5	12.0	12.0	14.5	12.5	13.5	18.0	15.0	16.5	14.0	12.5	13.5
11	12.5	11.5	12.0	12.5	12.0	12.5	17.5	15.0	16.5	14.5	12.0	13.5
12	12.0	11.0	11.5	14.0	12.0	13.0	17.0	15.0	16.0	14.5	12.5	13.5
13	11.5	10.5	11.0	14.5	11.5	13.0	16.5	14.5	15.0	14.5	12.5	14.0
14	11.5	10.0	11.0	16.0	13.0	14.5	14.5	13.0	13.5	15.5	13.5	14.5
15	11.0	10.0	10.5	17.0	14.0	15.5	16.0	12.5	14.5	15.5	14.0	14.5
16	11.0	10.0	10.5	17.5	14.5	16.0	17.0	15.5	16.5	15.0	13.5	14.5
17	11.0	10.0	10.5	18.0	15.5	17.0	17.0	15.0	16.0	15.0	13.5	14.5
18	10.0	9.5	10.0	18.0	16.0	17.0	15.5	14.0	14.5	15.0	13.5	14.5
19	10.5	9.5	10.0	18.0	16.0	17.0	14.0	12.5	13.0	15.0	14.0	14.5
20	12.0	10.0	11.0	18.5	16.0	17.0	14.5	12.5	13.5	15.0	14.0	15.0
21	12.0	10.5	11.5	17.0	15.5	16.5	14.5	13.5	14.0	15.0	14.0	14.5
22	13.0	10.0	11.5	16.5	14.0	15.0	16.0	13.5	14.5	15.0	13.5	14.5
23	13.5	12.0	13.0	17.0	14.5	15.5	15.5	14.0	15.0	14.5	12.5	14.0
24	14.0	12.5	13.5	17.5	15.0	16.0	16.0	14.0	15.0	14.5	13.0	14.0
25	14.5	13.0	14.0	18.0	15.5	17.0	16.0	14.5	15.5	14.5	13.0	14.0
26	14.5	13.5	14.0	18.5	15.5	17.0	16.5	15.0	15.5	15.0	14.0	14.5
27	14.5	13.0	14.0	18.5	15.5	17.0	16.0	15.0	15.5	14.0	12.5	13.5
28	15.0	13.5	14.0	17.0	15.0	16.0	16.5	14.0	15.5	13.5	12.5	13.0
29	14.5	11.5	13.0	16.5	13.5	15.0	16.5	15.5	16.0	12.5	11.5	12.0
30	11.5	11.0	11.0	17.5	14.0	16.0	16.0	14.5	15.0	14.0	12.0	13.0
31	---	---	---	18.5	15.0	17.0	15.0	13.5	14.5	---	---	---
MONTH	15.0	8.0	11.5	18.5	9.0	15.0	18.5	12.5	15.5	15.5	11.5	14.0
YEAR	18.5	.0	9.0									

14234800 RIFFE LAKE NEAR MOSSYROCK, WA

LOCATION.--Lat 46°32'07", long 122°25'25", in SE¼SW¼ sec.10, T.12 N., R.3 E., Lewis County, Hydrologic Unit 17080005, in emergency generator room on top of Mossyrock Dam on Cowlitz River, 2.8 mi (4.5 km) east of Mossyrock and at mile 65.5 (105.4 km).

DRAINAGE AREA.--1,154 mi² (2,989 km²).

MONTHEND CONTENTS

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder; nonrecording gage prior to July 25, 1968. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by city of Tacoma).

REVISED RECORDS.--WRD Wash. 1974: 1973.

REMARKS.--Reservoir is formed by concrete arch dam, completed in April 1968; storage began Apr. 3, 1968. Usable capacity, 1,297,400 acre-ft (1,600 hm³) between elevations 600 ft (182.9 m), minimum operating level, and 770 ft (234.7 m), normal operating pool Unused storage below elevation 600 ft (182.9 m), 288,900 acre-ft (356 hm³). Crest of spillway is at elevation 778.5 ft (237.29 m). Water used by city of Tacoma for power development. Elevation records collected in cooperation with city of Tacoma. Figures given herein represent total contents. Capacity table furnished by city of Tacoma. Tacoma City Light radio telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents 1,686,300 acre-ft (2,080 hm³) July 31, 1972, elevation, 778.63 ft (237.326 m); minimum since normal low operating level was attained, 658,503 acre-ft (812 hm³) Mar. 17, 1977, elevation, 666.88 ft (203.265 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,667,436 acre-ft (2,060 hm³) July 23, elevation, 777.03 ft (236.839 m); minimum, 817,715 acre-ft (1,010 hm³) Feb. 5, elevation, 688.35 (209.809 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	775.90	1,654,202	----
Oct. 31	760.35	1,480,055	-174,147
Nov. 30	738.16	1,254,394	-225,661
Dec. 31	716.51	1,053,496	-200,898
CAL YR 1978	----	----	-299,888
Jan. 31	692.39	849,691	-203,805
Feb. 28	702.90	935,716	+86,025
Mar. 31	736.31	1,236,559	+300,843
Apr. 30	753.07	1,403,453	+166,894
May 31	774.98	1,643,478	+240,025
June 30	775.83	1,653,384	+9,906
July 31	776.64	1,662,861	+9,477
Aug. 31	774.00	1,632,108	-30,753
Sept. 30	770.91	1,596,624	-35,484
WTR YR 1979	----	----	-57,578

14234800 RIFFE LAKE NEAR MOSSYROCK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Descriptive location given is for lake outlet. Samples taken elsewhere within lake body.

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978								
17...	1040	1.0	48	--	15.4	1.0	9.3	1
17...	1055	20	48	--	15.4	1.0	9.4	<1
17...	1105	50	47	--	15.4	.00	9.3	<1
17...	1110	100	50	--	13.4	1.0	8.7	<1
17...	1130	200	50	--	9.7	1.0	9.4	<1
17...	1135	300	55	--	7.9	2.0	8.6	25
NOV								
07...	1020	1.0	45	7.2	12.9	1.0	9.8	<1
07...	1035	20	45	7.3	12.9	1.0	9.9	<1
07...	1045	50	44	7.2	12.9	1.0	9.6	<1
07...	1050	100	44	7.2	12.9	1.0	9.6	<1
07...	1100	200	44	7.1	10.3	1.0	8.8	<1
07...	1110	300	43	6.9	7.9	4.0	8.3	<1
DEC								
05...	1030	1.0	45	7.9	9.3	1.0	10.3	<1
05...	1035	20	44	7.5	9.4	.00	10.3	<1
05...	1040	50	45	7.3	9.4	1.0	10.2	<1
05...	1045	100	47	7.1	8.9	1.0	10.2	<1
05...	1055	200	45	7.0	8.7	1.0	10.3	<1
05...	1100	300	48	7.0	8.0	2.0	7.5	<1
JAN , 1979								
11...	1030	1.0	47	7.4	4.9	2.0	11.8	<1
11...	1045	20	47	7.5	4.9	2.0	11.8	<1
11...	1050	50	47	7.2	4.9	4.0	11.7	<1
11...	1055	100	48	7.3	4.9	2.0	11.8	<1
11...	1105	200	48	7.3	4.8	2.0	11.6	<1
11...	1115	270	49	7.4	4.8	3.0	11.8	<1
FEB								
06...	1040	1.0	50	6.8	4.0	1.0	12.1	<1
06...	1045	20	54	6.6	4.0	2.0	12.1	<1
06...	1050	50	50	6.9	4.0	2.0	12.9	<1
06...	1055	100	50	6.8	3.9	2.0	12.1	<1
06...	1100	200	50	6.8	3.9	2.0	11.9	<1
06...	1105	260	50	6.6	4.0	3.0	11.9	1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
OCT , 1978								
17...	.00	.00	.21	.21	.21	.93	.000	.01
17...	.00	.00	.53	.53	.53	2.3	.010	.01
17...	.00	.00	.25	.25	.25	1.1	.010	.00
17...	.01	.00	.38	.38	.39	1.7	.000	.01
17...	.05	.00	.31	.31	.36	1.6	.010	.01
17...	.11	.00	1.1	1.1	1.2	5.4	.010	.01
NOV								
07...	.01	.01	.11	.12	.13	.58	.000	.00
07...	.01	.01	.08	.09	.10	.44	.000	.00
07...	.01	.00	.02	.02	.03	.13	.000	.00
07...	.01	.00	.15	.15	.16	.71	.000	.00
07...	.05	.00	.15	.15	.20	.89	.000	.00
07...	.11	.01	.12	.13	.24	1.1	.010	.00
DEC								
05...	.04	.01	.03	.04	.08	.35	.010	.01
05...	.02	.01	.04	.05	.07	.31	.000	.01
05...	.03	.01	.05	.06	.09	.40	.000	.01
05...	.02	.01	.05	.06	.08	.35	.010	.01
05...	.03	.01	.10	.11	.14	.62	.010	.02
05...	.11	.02	.03	.05	.16	.71	.010	.01
JAN , 1979								
11...	.05	.00	.03	.03	.08	.35	.020	.00
11...	.06	.01	.06	.07	.13	.58	.020	.00
11...	.07	.00	.07	.07	.14	.62	.020	.00
11...	.05	.00	.07	.07	.12	.53	.020	.00
11...	.08	.00	.04	.04	.12	.53	.020	.00
11...	.06	.00	.02	.02	.08	.35	.020	.00
FEB								
06...	.07	.03	.02	.05	.12	.53	.000	.00
06...	.06	.00	.13	.13	.19	.84	.000	.00
06...	.07	.01	.04	.05	.12	.53	.000	.00
06...	.07	.00	.05	.05	.12	.53	.000	.00
06...	.07	.00	.13	.13	.20	.89	.000	.00
06...	.08	.01	.04	.05	.13	.58	.010	.00

14234800 RIFFE LAKE NEAR MOSSYROCK, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
MAR , 1979								
06...	0955	1.0	55	7.2	3.8	2.0	12.8	<1
06...	1000	20	55	7.2	3.8	2.0	12.7	<1
06...	1015	50	55	7.1	3.8	2.0	12.9	<1
06...	1020	100	55	7.1	3.8	2.0	12.8	<1
06...	1030	200	55	7.1	3.8	2.0	12.4	<1
06...	1040	285	55	7.1	3.7	2.0	12.0	<1
APR								
11...	1020	1.0	54	7.2	6.4	3.0	11.3	<1
11...	1030	20	55	7.4	6.3	2.0	11.6	<1
11...	1035	50	54	7.5	5.8	2.0	11.7	<1
11...	1040	100	56	7.4	5.3	2.0	11.5	<1
11...	1045	200	59	7.3	4.8	2.0	11.6	<1
11...	1050	300	58	7.1	4.6	2.0	11.4	<1
MAY								
08...	1010	1.0	50	7.3	10.2	1.0	11.2	<1
08...	1020	20	50	7.4	9.8	1.0	11.3	<1
08...	1025	50	50	7.3	8.3	1.0	11.4	<1
08...	1030	100	53	7.0	6.1	1.0	11.7	<1
08...	1035	200	54	6.9	5.0	2.0	11.7	<1
08...	1045	275	54	6.9	4.8	2.0	11.6	<1
JUN								
05...	1030	1.0	44	7.8	14.6	1.0	10.6	1
05...	1035	20	44	7.7	12.4	1.0	10.7	<1
05...	1040	50	43	7.5	11.6	1.0	10.9	<1
05...	1050	100	45	7.5	9.8	1.0	11.6	<1
05...	1100	200	56	7.3	5.5	2.0	11.6	<1
05...	1110	300	54	7.2	5.1	1.0	11.6	<1
JUL								
10...	1020	1.0	41	7.8	17.5	1.0	9.5	<1
10...	1030	20	47	7.8	17.3	1.0	9.5	<1
10...	1035	50	40	7.6	13.4	1.0	9.5	<1
10...	1045	100	40	7.5	11.1	1.0	10.0	<1
10...	1050	200	48	7.5	7.8	1.0	10.9	<1
10...	1100	300	54	7.5	5.8	1.0	10.5	1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
MAR , 1979								
06...	.09	.01	.03	.04	.13	.58	.020	.01
06...	.09	.01	.06	.07	.16	.71	.030	.01
06...	.09	.01	.03	.04	.13	.58	.020	.01
06...	.10	.01	.10	.11	.21	.93	.020	.01
06...	.09	.01	.06	.07	.16	.71	.020	.00
06...	.10	.01	.08	.09	.19	.84	.020	.00
APR								
11...	.15	.01	.03	.04	.19	.84	.010	.00
11...	.15	.01	.06	.07	.22	.97	.010	.00
11...	.15	.02	.00	.02	.17	.75	.010	.01
11...	.14	.01	.04	.05	.19	.84	.010	.01
11...	.14	.01	.02	.03	.17	.75	.010	.01
11...	.14	.01	.00	.01	.15	.66	.010	.00
MAY								
08...	.05	.03	.02	.05	.10	.44	.000	.00
08...	.06	.01	.05	.06	.12	.53	.000	.00
08...	.10	.01	.03	.04	.14	.62	.000	.00
08...	.14	.00	.05	.05	.19	.84	.000	.00
08...	.14	.00	.02	.02	.16	.71	.010	.00
08...	.14	.00	.05	.05	.19	.84	.010	.00
JUN								
05...	.05	.01	.00	.01	.06	.27	.010	.00
05...	.05	.01	.03	.04	.09	.40	.010	.03
05...	.06	.02	.00	.02	.08	.35	.010	.00
05...	.07	.01	.10	.11	.18	.80	.010	.02
05...	.15	.01	.01	.02	.17	.75	.010	.02
05...	.15	.01	.01	.02	.17	.75	.010	.00
JUL								
10...	.10	.01	.08	.09	.19	.84	.000	.03
10...	.05	.01	.00	.01	.06	.27	.010	.03
10...	.12	.03	.01	.04	.16	.71	.000	.03
10...	.10	.04	.00	.00	.10	.44	.010	.03
10...	.17	.02	.02	.04	.21	.93	.010	.03
10...	.27	.03	.05	.08	.35	1.6	.010	.03

14234800 RIFFE LAKE NEAR MOSSYROCK, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
AUG , 1979								
07...	1010	1.0	43	7.2	19.3	1.0	8.8	<1
07...	1020	20	44	7.3	19.1	1.0	9.7	<1
07...	1025	50	44	7.0	17.0	1.0	8.7	<1
07...	1035	100	44	6.9	11.4	1.0	9.5	<1
07...	1045	200	50	6.9	7.4	1.0	11.4	<1
07...	1050	300	54	6.9	6.2	1.0	10.1	<1
SEP								
11...	1030	1.0	48	7.4	18.2	1.0	8.9	<1
11...	1040	20	48	7.6	18.2	.00	8.9	1
11...	1050	50	48	7.6	18.2	.00	8.9	<1
11...	1100	100	46	7.4	12.5	1.0	8.8	<1
11...	1110	200	51	7.6	8.3	1.0	10.2	<1
11...	1115	300	58	7.6	6.4	1.0	9.6	<1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
AUG , 1979								
07...	.01	.00	.02	.02	.03	.13	.010	.04
07...	.00	.00	.01	.01	.01	.04	.010	.03
07...	.00	.00	.04	.04	.04	.18	.010	.01
07...	.06	.00	.02	.02	.08	.35	.010	.01
07...	.11	.01	.04	.05	.16	.71	.010	.01
07...	.15	.00	.10	.10	.25	1.1	.010	.01
SEP								
11...	.01	.01	.19	.20	.21	.93	.010	.03
11...	.02	.01	.12	.13	.15	.66	.010	.01
11...	.01	.01	.15	.16	.17	.75	.010	.01
11...	.06	.01	--	--	--	--	.010	.01
11...	.10	.01	.38	.39	.49	2.2	.010	.01
11...	.16	.01	.36	.37	.53	2.3	.010	.03

14234805 MOSSYROCK POWERPLANT TAILWATER NEAR MOSSYROCK, WA

LOCATION.--Lat 46°30'15", long 122°35'12", in SW¼SW¼ sec.10, T.12 N., R.3 E., Lewis County, Hydrologic Unit 17080005.

PERIOD OF RECORD.--October 1977 to current year.

WATER QUALITY DATA

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978								
17...	1230	49	--	9.4	1.0	9.1	<1	.07
NOV								
07...	1150	52	7.0	10.1	2.0	8.8	<1	.08
DEC								
05...	1140	51	7.6	8.0	1.0	10.2	1	.04
JAN , 1979								
11...	1150	50	7.3	5.4	3.0	11.8	<1	.07
FEB								
06...	1200	51	6.7	4.6	2.0	12.0	<2	.06
MAR								
06...	1120	57	7.4	4.6	2.0	12.9	<1	.10
APR								
11...	1145	53	7.2	5.2	2.0	11.5	<1	.15
MAY								
08...	1120	55	6.9	6.0	2.0	11.6	<1	.14
JUN								
05...	1155	54	7.5	6.0	2.0	10.5	<1	.15
JUL								
10...	1035	51	7.6	6.8	1.0	10.9	<1	.16
AUG								
07...	1120	53	7.1	7.1	1.0	10.1	<1	.14
SEP								
11...	1150	54	7.2	7.5	1.0	10.2	<1	.14

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
OCT , 1978							
17...	.00	.14	.14	.21	.93	.010	.01
NOV							
07...	.00	.01	.01	.09	.40	.000	.00
DEC							
05...	.01	.08	.09	.13	.58	.010	.01
JAN , 1979							
11...	.01	.06	.07	.14	.62	.020	.00
FEB							
06...	.00	.04	.04	.10	.44	.000	.00
MAR							
06...	.01	.04	.05	.15	.66	.020	.00
APR							
11...	.01	.14	.15	.30	1.3	.010	.01
MAY							
08...	.00	.10	.10	.24	1.1	.010	.00
JUN							
05...	.01	.08	.09	.24	1.1	.010	.00
JUL							
10...	.01	.07	.08	.24	1.1	.010	.04
AUG							
07...	.00	.10	.10	.24	1.1	.010	.01
SEP							
11...	.02	.29	.31	.45	2.0	.010	.03

14234810 COWLITZ RIVER BELOW MOSSYROCK DAM, WA

LOCATION.--Lat 46°32'10", long 122°25'45", in SE¼SE¼ in sec.9, T.12 N., R.3 E., Lewis County, Hydrologic Unit 17080005, on left bank 0.2 mi (0.3 km) downstream from Mossyrock Dam and 2.6 mi (4.2 km) east from town of Mossyrock.

DRAINAGE AREA.--1,154 mi² (2,989 km²) at Mossyrock Dam.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1970 to current year.

INSTRUMENTATION.--Temperature recorder since July 1970.

REMARKS.--Interruptions in record were due to malfunctions of the instrument. Records represent water temperatures at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 15.0°C June 11, 1978 (no outflow from dam); minimum, 3.5°C Feb. 9, 10, 25, 1972.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 11.0°C on Nov. 10; minimum recorded, 4.0°C Feb. 25-28, Mar. 1-5, 8, 9.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	9.0	9.0	9.0	9.5	9.5	9.5	9.5	9.5	9.5			
2	9.0	8.5	8.5	10.0	9.5	10.0	9.5	9.5	9.5			
3	9.0	9.0	9.0	10.0	10.0	10.0	9.5	9.5	9.5			
4	9.0	9.0	9.0	10.0	9.5	10.0	9.5	9.5	9.5			
5	9.0	9.0	9.0	10.5	10.0	10.5	9.5	9.0	9.5			
6	9.0	9.0	9.0	10.0	10.0	10.0	9.0	9.0	9.0			
7	9.5	9.0	9.0	10.0	10.0	10.0	9.0	9.0	9.0			
8	9.0	9.0	9.0	10.5	10.0	10.0	9.0	9.0	9.0			
9	9.0	9.0	9.0	10.5	10.5	10.5	9.0	9.0	9.0			
10	9.5	9.0	9.0	11.0	10.0	10.5	9.0	9.0	9.0			
11	9.0	9.0	9.0	10.5	10.0	10.0	9.0	8.5	9.0			
12	9.0	9.0	9.0	10.5	10.0	10.5	8.5	8.5	8.5			
13	9.5	9.0	9.0	10.5	10.0	10.5	8.5	8.5	8.5			
14	9.5	9.0	9.5	10.5	10.0	10.5	8.5	8.5	8.5			
15	9.5	9.0	9.5	10.5	10.5	10.5	8.5	8.5	8.5			
16	9.5	9.0	9.5	10.5	10.5	10.5	8.5	8.5	8.5			
17	9.5	9.0	9.0	10.5	10.0	10.5	8.5	8.5	8.5			
18	9.5	9.0	9.5	10.5	10.0	10.0	8.5	8.0	8.5			
19	9.5	9.5	9.5	10.5	10.5	10.5	8.0	8.0	8.0			
20	9.5	9.5	9.5	10.5	10.5	10.5	8.0	8.0	8.0			
21	9.5	9.5	9.5	10.5	10.5	10.5	8.0	8.0	8.0			
22	9.5	9.0	9.0	10.5	10.5	10.5	8.0	7.5	7.5			
23	9.5	9.5	9.5	10.5	10.0	10.5	7.5	7.5	7.5			
24	10.0	9.5	9.5	10.5	10.0	10.0	7.5	7.0	7.0			
25	10.0	9.5	10.0	10.5	10.0	10.0	7.0	7.0	7.0			
26	9.5	9.5	9.5	10.0	10.0	10.0	7.5	7.0	7.5			
27	10.0	9.5	9.5	10.0	10.0	10.0	7.5	7.5	7.5			
28	10.0	9.5	10.0	10.0	10.0	10.0	7.5	7.0	7.5			
29	10.0	9.5	9.5	10.0	9.5	10.0	7.0	7.0	7.0			
30	10.0	9.5	10.0	9.5	9.5	9.5	7.0	7.0	7.0			
31	10.0	9.5	9.5	---	---	---	7.0	7.0	7.0			
MONTH	10.0	8.5	9.5	11.0	9.5	10.0	9.5	7.0	8.5			

14234810 COWLITZ RIVER BELOW MOSSYROCK DAM, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0
2	4.5	4.5	4.5	4.0	4.0	4.0	5.0	5.0	5.0	5.5	5.0	5.5
3	4.5	4.5	4.5	4.0	4.0	4.0	5.0	5.0	5.0	5.5	5.0	5.0
4	4.5	4.5	4.5	4.0	4.0	4.0	5.0	5.0	5.0	5.5	5.0	5.0
5	4.5	4.5	4.5	4.5	4.0	4.5	5.5	5.0	5.0	5.0	5.0	5.0
6	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.0	5.0	5.0	5.0	5.0
7	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.0	5.0	5.5	5.0	5.5
8	4.5	4.5	4.5	4.5	4.0	4.5	5.0	5.0	5.0	6.0	5.5	5.5
9	4.5	4.5	4.5	4.5	4.0	4.0	5.0	5.0	5.0	6.5	5.5	6.0
10	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5
11	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.0	5.0	5.5	5.5	5.5
12	4.5	4.5	4.5	4.5	4.5	4.5	6.0	5.0	5.5	5.5	5.0	5.0
13	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.0	5.5	5.5	5.0	5.0
14	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.0	5.5	5.5	5.5	5.5
15	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.0	5.0
16	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0
17	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.0	5.5
18	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
19	4.5	4.5	4.5	5.0	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5
20	4.5	4.5	4.5	5.5	5.0	5.0	6.0	5.0	5.5	5.5	5.5	5.5
21	4.5	4.5	4.5	5.5	5.0	5.5	6.0	5.5	5.5	5.5	5.5	5.5
22	4.5	4.5	4.5	5.5	5.5	5.5	5.5	5.0	5.0	5.5	5.5	5.5
23	4.5	4.5	4.5	6.0	5.5	5.5	5.0	5.0	5.0	6.0	5.5	5.5
24	4.5	4.5	4.5	5.5	5.5	5.5	5.0	5.0	5.0	6.0	5.5	5.5
25	4.5	4.0	4.5	5.5	5.0	5.0	5.5	5.0	5.0	6.0	5.5	5.5
26	4.0	4.0	4.0	5.5	5.0	5.0	5.5	5.0	5.0	5.5	5.5	5.5
27	4.0	4.0	4.0	5.5	5.0	5.0	5.5	5.0	5.0	6.0	5.5	5.5
28	4.0	4.0	4.0	5.0	5.0	5.0	5.5	5.0	5.0	6.0	5.5	5.5
29	---	---	---	5.0	5.0	5.0	5.5	5.0	5.0	6.0	5.5	5.5
30	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0	6.0	5.5	6.0
31	---	---	---	5.0	5.0	5.0	---	---	---	6.0	5.5	5.5
MONTH	4.5	4.0	4.5	6.0	4.0	4.5	6.0	5.0	5.0	6.5	5.0	5.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	6.5	5.5	6.0	7.0	6.5	6.5				---	---	---
2	6.0	6.0	6.0	7.0	6.0	6.5				---	---	---
3	6.0	6.0	6.0	---	---	---				---	---	---
4	6.0	6.0	6.0	---	---	---				---	---	---
5	6.0	6.0	6.0	---	---	---				---	---	---
6	6.0	6.0	6.0	---	---	---				---	---	---
7	6.0	6.0	6.0	---	---	---				---	---	---
8	6.0	6.0	6.0	---	---	---				---	---	---
9	6.0	6.0	6.0	---	---	---				---	---	---
10	6.5	6.0	6.0	---	---	---				---	---	---
11	6.0	6.0	6.0	---	---	---				---	---	---
12	6.5	6.0	6.0	---	---	---				---	---	---
13	6.5	6.0	6.0	---	---	---				---	---	---
14	6.0	6.0	6.0	---	---	---				---	---	---
15	6.5	6.0	6.5	---	---	---				---	---	---
16	6.5	6.0	6.5	---	---	---				---	---	---
17	6.5	6.0	6.0	---	---	---				---	---	---
18	6.5	6.0	6.0	---	---	---				8.5	7.5	8.0
19	6.0	6.0	6.0	---	---	---				8.0	8.0	8.0
20	6.0	6.0	6.0	---	---	---				8.0	8.0	8.0
21	6.5	6.0	6.5	---	---	---				8.5	8.0	8.0
22	7.0	6.5	6.5	---	---	---				8.0	8.0	8.0
23	6.5	6.5	6.5	---	---	---				8.5	8.0	8.0
24	6.5	6.0	6.5	---	---	---				8.0	8.0	8.0
25	6.5	6.0	6.5	---	---	---				8.0	8.0	8.0
26	6.5	6.0	6.5	---	---	---				8.5	8.0	8.0
27	6.5	6.5	6.5	---	---	---				8.0	8.0	8.0
28	6.5	6.0	6.5	---	---	---				8.5	8.0	8.5
29	7.0	6.0	6.5	---	---	---				8.5	8.0	8.5
30	6.5	6.5	6.5	---	---	---				8.5	8.0	8.5
31	---	---	---	---	---	---				---	---	---
MONTH	7.0	5.5	6.0	7.0	6.0	6.5				8.5	7.5	8.0
YEAR	11.0	4.0	7.0									

14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA

LOCATION.--Lat 46°35'44", long 122°27'30", in NE¼SW¼ sec.20, T.13 N., R.3 E., Lewis County, Hydrologic Unit 17080005, on right bank 0.9 mi (1.4 km) upstream from Bear Canyon Creek, 3.5 mi (5.6 km) southeast of Cinebar, and at mile 7.1 (11.4 km).

DRAINAGE AREA.--141 mi² (365 km²).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1956 to current year.

REVISED RECORDS.--WRD Wash. 1972: 1957(M), 1959(P), 1960(P), 1961(M), 1963(P), 1964(M), 1965, 1967(P), 1971(P).

GAGE.--Water-stage recorder. Altitude of gage is 600 ft (183 m), from topographic map.

REMARKS.--Water-discharge records good. Several small diversions for municipal and domestic use above station. No regulation. Tacoma City Light radio telemeter at station.

AVERAGE DISCHARGE.--23 years, 846 ft³/s (23.96 m³/s) 81.48 in/yr (2,070 mm/yr), 612,900 acre-ft/yr (756 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s (637 m³/s) Dec. 2, 1977, gage height, 17.00 ft (5.182 m), from rating curve extended above 10,500 ft³/s (297 m³/s) on basis of slope-area measurement at gage height of 14.79 ft (4.508 m); minimum, 52 ft³/s (1.47 m³/s), Sept. 27-29, 1967; minimum gage height, 1.96 ft (0.597 m) Aug. 31, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,200 ft³/s (176 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 6	2315	*11,600	329	*11.65	3.551	Mar. 5	0315	6,240	177	8.51	2.594

Minimum discharge, 67 ft³/s (1.90 m³/s) Aug. 13, gage height, 2.30 ft (0.701 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	261	174	3170	560	330	994	465	605	217	400	81	87
2	238	169	1870	520	310	847	525	550	208	340	81	226
3	226	615	1560	500	290	910	540	505	199	284	80	366
4	214	1280	2120	480	320	2300	635	630	194	250	78	274
5	202	720	1660	460	1050	5020	678	1040	208	220	78	202
6	191	505	1260	440	3760	4220	690	1240	202	190	76	174
7	183	416	994	425	6410	3170	645	1030	188	172	76	149
8	177	690	828	416	2730	2060	635	903	180	161	72	151
9	172	545	762	403	3270	1510	702	780	172	151	72	241
10	172	456	720	515	3100	1210	714	666	164	156	71	220
11	172	395	1930	474	3080	1060	810	595	159	164	69	185
12	164	355	1540	465	3540	973	854	540	154	161	69	161
13	156	320	1140	460	3340	882	1390	505	151	146	69	144
14	151	295	1260	424	2280	834	1400	483	149	137	72	129
15	146	277	1260	399	1630	800	1140	460	146	129	74	120
16	144	555	1040	378	1270	860	1010	433	154	123	81	116
17	141	1520	910	358	1070	938	987	403	156	116	91	109
18	137	1010	798	343	1110	834	987	378	154	112	95	105
19	134	882	696	351	987	720	931	358	159	107	95	99
20	139	690	630	640	868	645	847	339	154	105	95	97
21	139	585	690	1900	780	595	792	324	144	103	93	95
22	132	515	1070	1210	702	560	780	309	139	103	99	93
23	127	460	1240	861	666	530	768	302	132	101	93	89
24	141	424	2990	720	738	510	768	288	127	99	85	87
25	132	395	2010	620	1020	496	738	270	123	95	78	85
26	125	370	1420	555	1710	465	726	264	118	93	72	81
27	123	366	1110	520	1590	460	744	291	114	91	71	83
28	125	678	910	474	1230	451	720	298	112	89	71	95
29	229	816	762	438	---	442	660	274	109	89	69	87
30	241	3000	660	380	---	460	635	245	159	85	69	83
31	194	---	610	350	---	460	---	229	---	83	78	---
TOTAL	5228	19478	39620	17039	49181	36216	23916	15537	4745	4655	2453	4233
MEAN	169	649	1278	550	1756	1168	797	501	158	150	79.1	141
MAX	261	3000	3170	1900	6410	5020	1400	1240	217	400	99	366
MIN	123	169	610	343	290	442	465	229	109	83	69	81
CFSM	1.20	4.60	9.06	3.90	12.5	8.28	5.65	3.55	1.12	1.06	.56	1.00
IN.	1.38	5.14	10.45	4.50	12.98	9.55	6.31	4.10	1.25	1.23	.65	1.12
AC-FT	10370	38630	78590	33800	97550	71830	47440	30820	9410	9230	4870	8400

CAL YR 1978 TOTAL 211089 MEAN 578 MAX 3170 MIN 84 CFSM 4.10 IN 55.69 AC-FT 418700
WTR YR 1979 TOTAL 222301 MEAN 609 MAX 6410 MIN 69 CFSM 4.32 IN 58.65 AC-FT 440900

14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: May 1965 to current year.

INSTRUMENTATION.--Temperature recorder since May 1965.

REMARKS.--Interruptions in record were due to instrument malfunction. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 24.5°C July 30, 1965; minimum, 0.0°C Jan. 1, 1979.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 21.5 °C Aug. 9-12; minimum, 0.0°C Jan. 1.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.5	11.0	12.0	8.0	5.5	6.5	6.0	5.5	6.0	1.0	.0	.5
2	13.5	10.0	11.5	8.0	6.0	7.0	6.0	5.5	6.0	2.5	1.0	2.0
3	13.5	10.0	11.5	9.0	8.0	8.5	6.5	6.0	6.0	3.0	2.5	2.5
4	13.5	10.0	11.5	9.5	7.0	8.5	6.5	5.0	5.5	3.0	2.0	2.5
5	13.5	10.0	11.5	7.5	6.0	7.0	5.0	4.5	5.0	1.5	1.0	1.5
6	13.5	10.0	11.5	8.0	6.0	7.0	4.5	4.0	4.0	1.5	1.0	1.5
7	13.5	10.5	12.0	9.0	7.5	8.5	3.5	3.0	3.5	1.5	1.0	1.5
8	14.5	11.5	12.5	9.0	7.5	8.5	4.0	3.5	3.5	3.0	1.5	2.5
9	12.0	11.5	11.5	7.5	5.5	6.5	4.5	4.0	4.5	4.0	3.0	3.5
10	12.5	11.5	12.0	5.5	4.0	5.0	5.0	4.5	4.5	4.0	3.5	4.0
11	13.5	11.5	12.0	4.0	3.0	3.5	5.0	4.5	5.0	4.0	3.5	3.5
12	12.0	9.5	11.0	3.5	2.5	3.0	5.0	4.0	4.5	4.0	4.0	4.0
13	12.5	9.0	10.5	3.5	2.5	3.0	4.0	3.5	4.0	4.0	3.5	4.0
14	13.0	9.0	11.0	3.5	2.5	3.0	5.0	4.0	4.5	4.0	3.5	3.5
15	12.5	9.5	11.0	4.5	3.0	3.5	5.0	4.5	5.0	4.0	4.0	4.0
16	11.5	11.0	11.5	5.0	4.5	5.0	4.5	4.0	4.5	4.0	3.5	4.0
17	13.0	10.5	11.5	6.0	5.0	5.5	5.0	4.5	5.0	3.5	3.0	3.0
18	13.5	10.0	11.5	6.0	5.5	6.0	5.0	4.5	4.5	3.0	2.5	3.0
19	12.5	9.5	11.0	5.5	3.5	4.0	4.5	3.5	4.0	4.0	3.0	3.5
20	12.0	10.0	11.5	4.0	3.0	3.5	4.5	4.0	4.0	4.5	4.0	4.5
21	11.0	8.5	9.5	4.0	3.0	3.5	5.0	4.5	5.0	4.5	3.5	4.0
22	11.0	8.5	9.5	3.5	3.0	3.5	5.0	4.5	5.0	4.0	3.0	3.5
23	11.0	8.5	9.5	4.5	3.5	4.0	6.0	5.0	5.5	4.0	3.5	4.0
24	12.0	9.5	10.5	5.0	4.0	4.5	6.0	5.5	5.5	4.5	4.0	4.0
25	10.5	7.5	9.0	5.0	4.0	4.5	5.0	4.5	5.0	4.0	3.5	3.5
26	9.5	7.0	8.5	4.5	4.0	4.0	4.5	4.0	4.0	3.0	2.5	3.0
27	10.0	7.5	8.5	5.0	3.5	4.0	4.5	3.5	4.0	4.0	2.5	3.0
28	8.5	8.0	8.5	5.5	4.5	5.0	3.5	2.0	2.5	4.0	3.0	3.5
29	8.5	8.0	8.0	5.5	5.0	5.5	1.5	1.0	1.0	2.5	1.5	2.0
30	8.5	7.0	7.5	5.5	5.5	5.5	1.0	.5	1.0	2.0	1.0	1.5
31	8.0	6.0	7.0	---	---	---	1.0	.5	.5	1.5	.5	1.0
MONTH	14.5	6.0	10.5	9.5	2.5	5.0	6.5	.5	4.5	4.5	.0	3.0

14236200 TILTON RIVER ABOVE BEAR CANYON CREEK, NEAR CINEBAR, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	2.0	1.0	1.0	5.5	4.0	4.5	6.0	5.5	6.0	10.0	8.5	9.0
2	2.0	.5	1.0	6.0	4.0	5.0	7.5	5.5	6.0	9.5	8.0	8.5
3	1.5	1.0	1.5	5.0	4.5	5.0	6.0	5.5	6.0	11.5	7.5	9.5
4	3.0	1.5	2.5	5.5	5.0	5.0	6.5	6.0	6.0	10.0	9.0	9.5
5	3.5	2.5	3.0	6.0	5.0	5.5	10.0	6.0	8.0	8.5	7.5	8.5
6	3.5	3.5	3.5	7.0	6.0	6.5	7.5	6.5	7.0	8.5	7.0	7.5
7	5.0	3.5	4.5	7.0	5.5	6.5	9.0	5.5	7.0	9.0	7.0	7.5
8	5.5	4.5	5.0	6.5	4.5	5.5	7.0	6.5	6.5	9.5	7.0	8.0
9	5.5	5.0	5.5	7.0	4.5	5.5	6.0	6.0	6.0	9.5	7.5	8.0
10	5.5	5.0	5.0	7.5	5.0	6.0	6.5	5.5	6.0	9.5	7.0	8.0
11	6.0	5.0	5.5	7.0	5.5	6.0	7.0	5.5	6.0	12.0	7.0	9.0
12	6.0	5.5	5.5	7.5	5.5	6.5	6.5	5.5	6.0	11.5	8.0	9.5
13	6.5	5.0	6.0	8.0	5.0	6.5	6.0	5.5	6.0	14.0	9.0	11.0
14	5.0	4.0	4.5	7.5	5.5	6.5	7.0	5.5	6.0	14.5	9.0	11.5
15	4.5	3.5	4.0	7.0	6.5	7.0	6.5	5.5	6.0	14.0	9.5	11.5
16	5.0	4.0	4.5	6.5	5.5	6.0	6.5	5.5	6.0	13.5	10.0	11.5
17	5.0	4.5	4.5	6.5	5.5	6.0	7.0	5.5	6.0	13.5	9.5	11.0
18	6.0	5.0	5.5	7.0	5.5	6.5	7.0	5.0	6.0	14.0	10.5	11.5
19	5.5	4.5	5.0	8.0	5.0	6.5	7.0	5.5	6.0	14.5	9.0	12.0
20	5.0	4.0	4.5	8.5	5.5	7.0	8.5	5.0	7.0	15.0	10.0	12.5
21	5.5	4.0	5.0	8.0	5.5	6.5	9.5	6.0	7.5	16.0	10.0	13.0
22	5.5	4.5	5.0	9.0	5.0	7.0	9.0	6.5	8.0	14.0	11.0	13.0
23	5.0	4.5	4.5	9.0	5.5	7.0	10.0	7.0	8.5	13.0	11.5	12.0
24	4.5	4.0	4.5	9.0	5.5	7.0	10.0	7.5	8.5	16.0	11.0	13.0
25	5.5	4.5	5.0	7.5	6.5	7.0	11.5	7.0	9.0	17.0	10.5	14.0
26	5.5	5.0	5.5	8.0	5.5	7.0	12.0	7.5	9.5	14.0	11.5	12.5
27	5.5	4.5	5.0	7.0	6.5	6.5	10.5	8.0	9.5	11.5	10.5	11.0
28	5.5	4.5	4.5	7.0	6.0	6.5	9.5	8.5	9.0	11.5	9.0	10.0
29	---	---	---	6.5	5.5	6.0	12.5	8.0	10.0	13.0	9.0	11.0
30	---	---	---	7.0	5.5	6.0	12.0	8.0	9.5	15.5	8.5	12.0
31	---	---	---	7.0	5.5	6.0	---	---	---	17.0	10.0	13.5
MONTH	6.5	.5	4.5	9.0	4.0	6.0	12.5	5.0	7.0	17.0	7.0	10.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.5	11.0	14.5	12.0	11.0	11.5	---	---	---	16.0	15.0	15.5
2	18.5	12.0	15.5	13.5	10.5	12.0	---	---	---	15.0	14.0	14.5
3	18.5	12.5	15.5	17.0	10.5	14.0	---	---	---	14.5	13.5	14.0
4	17.5	13.0	15.0	15.5	12.5	14.0	---	---	---	15.0	13.0	14.0
5	15.5	13.0	14.0	18.5	12.0	15.0	---	---	---	13.5	13.0	13.5
6	14.0	11.0	12.5	16.5	13.0	14.5	---	---	---	16.5	12.5	14.0
7	16.0	10.5	13.0	17.0	12.5	15.0	---	---	---	18.5	13.0	15.5
8	17.5	10.5	14.0	18.0	13.5	16.0	21.0	14.0	17.5	15.5	14.0	14.5
9	18.5	11.5	15.0	18.0	14.5	16.0	21.5	14.0	17.5	15.0	13.0	14.0
10	19.5	12.5	16.0	16.0	14.0	15.0	21.5	14.5	18.0	16.5	12.0	14.0
11	18.0	13.0	15.5	14.5	13.0	14.0	21.5	14.5	17.5	16.5	11.5	14.0
12	17.5	11.5	14.5	16.5	12.5	14.5	21.5	14.5	17.5	17.0	12.0	14.5
13	17.5	12.0	14.5	---	---	---	17.0	15.0	15.5	17.5	12.5	15.0
14	17.0	11.5	14.5	---	---	---	15.5	14.0	15.0	18.5	13.0	15.5
15	15.5	12.0	13.5	---	---	---	20.5	14.5	16.5	16.0	14.5	15.0
16	14.0	11.5	13.0	---	---	---	17.5	15.5	16.5	17.0	14.0	15.0
17	13.0	12.0	12.5	---	---	---	19.5	15.0	17.0	18.0	12.5	15.0
18	13.0	11.5	12.0	---	---	---	16.0	14.5	15.5	18.0	13.0	15.5
19	13.5	11.0	12.5	---	---	---	16.0	14.0	15.0	15.5	14.5	15.0
20	16.0	11.5	13.5	---	---	---	17.0	14.0	15.5	16.5	14.5	15.5
21	15.0	11.5	13.0	---	---	---	16.5	14.5	15.5	17.0	14.0	15.0
22	17.5	11.0	14.0	---	---	---	19.0	14.0	16.5	16.5	13.5	14.5
23	19.0	12.0	15.5	---	---	---	16.0	14.5	15.0	16.5	12.0	14.0
24	20.5	12.5	16.5	---	---	---	20.0	13.0	16.0	17.5	12.0	14.5
25	21.0	13.0	17.0	---	---	---	19.5	14.0	17.0	17.0	12.5	15.0
26	20.5	13.5	17.0	---	---	---	20.5	14.5	17.0	16.0	14.0	15.0
27	20.5	13.0	16.5	---	---	---	17.0	15.5	16.0	15.5	12.0	14.0
28	21.0	14.0	17.0	---	---	---	19.0	14.0	16.0	16.0	12.5	14.0
29	16.0	14.0	14.5	---	---	---	16.5	15.0	16.0	14.5	11.5	13.0
30	13.5	12.5	13.0	---	---	---	15.5	14.5	15.0	16.5	12.5	14.0
31	---	---	---	---	---	---	18.5	14.0	15.5	---	---	---
MONTH	21.0	10.5	14.5	18.5	10.5	14.5	21.5	13.0	16.5	18.5	11.5	14.5
YEAR	21.5	.0	9.0									

14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA

LOCATION.--Lat 46°30'13", long 122°35'11", in SE¼SW¼ sec.20, T.12 N., R.2 E., Lewis County, Hydrologic Unit 17080005, on right bank at Mayfield Dam on Cowlitz River 0.3 mi (0.5 km) downstream from Silver Creek, 4 mi (6.4 km) south of town of Silver Creek, and at mi 52.0 (83.7 km).

DRAINAGE AREA.--1,392 mi^2 (3,605 km^2).

MONTHEND CONTENTS

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Mar. 5, 1963, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete arch dam, completed April 1962; storage began Apr. 14, 1962. Usable capacity, 21,380 acre-ft (26.4 hm^3) between elevation 415 ft (126.5 m), lower limit of operation, and 425 ft (129.5 m), top of taintor gates. Dead storage below elevation 415 ft (126.5 m), 112,340 acre-ft (139 hm^3). Crest of spillway is at elevation 385 ft (117.3 m). Water is used by city of Tacoma for power development. Figures given herein represent total contents. Capacity table furnished by city of Tacoma.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 134,850 acre-ft (166 hm^3) Dec. 9, 1971, elevation, 425.50 ft (129.692 m); minimum since normal operating level was attained, 112,830 acre-ft (139 hm^3) June 4, 1969, elevation, 415.24 ft (126.565 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 133,808 acre-ft (165 hm^3) Feb. 7, elevation, 425.04 fc (129.552 m); minimum, 115,473 acre-ft (142 hm^3) Mar. 30, elevation, 416.53 ft (126.958 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	422.87	128,984	----
Oct. 31	423.92	131,304	+2,320
Nov. 30	424.70	133,050	+1,746
Dec. 31	423.49	130,348	-2,702
CAL YR 1978	----	----	+1,109
Jan. 31	423.80	131,040	+692
Feb. 28	424.59	132,798	+1,758
Mar. 31	417.90	118,320	-14,478
Apr. 30	422.17	127,444	+9,124
May 31	424.38	132,334	+4,890
June 30	424.20	131,930	-404
July 31	424.27	132,084	+154
Aug. 31	424.32	132,196	+112
Sept. 30	422.11	127,311	-4,885
WTR YR 1979	----	----	-1,673

14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Descriptive location given is for reservoir outlet. Samples taken elsewhere within reservoir body.

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978								
17...	1340	1.0	49	--	11.8	1.0	10.4	1
17...	1355	20	48	--	9.9	1.0	9.2	<1
17...	1400	50	49	--	9.4	1.0	9.5	<1
17...	1410	100	57	--	7.2	1.0	8.3	<1
NOV								
07...	1325	1.0	51	7.3	9.7	1.0	10.1	10
07...	1335	20	52	7.4	9.5	1.0	9.9	8
07...	1340	50	52	7.4	9.5	1.0	9.7	11
07...	1350	100	58	7.5	7.3	1.0	8.5	<1
07...	1355	180	62	7.0	6.6	2.0	6.9	<1
DEC								
05...	1330	1.0	45	7.0	8.6	1.0	10.6	6
05...	1340	20	46	7.0	8.5	1.0	10.5	7
05...	1345	50	45	7.1	7.8	2.0	10.8	8
05...	1350	100	45	7.1	7.0	2.0	11.1	13
05...	1400	180	57	6.9	6.6	2.0	6.5	2
JAN , 1979								
11...	1345	1.0	41	7.4	4.5	1.0	12.0	<1
11...	1400	20	41	7.4	4.5	1.0	12.0	16
11...	1410	50	41	7.5	4.4	2.0	11.9	2
11...	1415	100	42	7.6	4.4	2.0	12.0	2
11...	1425	180	42	7.6	4.3	2.0	12.0	3
FEB								
06...	1415	1.0	48	7.0	3.8	2.0	12.3	<1
06...	1420	20	48	7.1	3.8	1.0	12.2	<1
06...	1425	50	48	7.6	3.7	1.0	12.2	2
06...	1430	100	48	7.7	3.7	1.0	12.2	<1
06...	1435	180	49	7.7	3.7	1.0	12.1	<1
MAR								
06...	1325	1.0	47	7.1	6.7	3.0	12.9	5
06...	1335	20	51	7.1	4.9	2.0	12.9	3
06...	1340	50	51	7.4	4.5	2.0	12.8	3
06...	1345	100	51	7.4	4.5	2.0	12.7	1
06...	1355	180	51	7.3	4.5	2.0	12.7	<1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
OCT , 1978								
17...	.02	.00	.10	.10	.12	.53	.010	.01
17...	.06	.00	.19	.19	.25	1.1	.010	.01
17...	.07	.00	.18	.18	.25	1.1	.010	.01
17...	.13	.00	.52	.52	.65	2.9	.000	.01
NOV								
07...	.03	.00	.18	.18	.21	.93	.000	.00
07...	.05	.01	.14	.15	.20	.89	.000	.00
07...	.05	.00	.02	.02	.07	.31	.000	.00
07...	.12	.00	.07	.07	.19	.84	.000	.00
07...	.14	.00	.05	.05	.19	.80	.000	.00
DEC								
05...	.09	.01	.12	.13	.22	.97	.010	.02
05...	.10	.03	.00	.03	.13	.58	.000	.01
05...	.23	.01	.16	.17	.40	1.8	.010	.01
05...	.74	.01	.18	.19	.93	4.1	.010	.01
05...	.22	.01	.14	.15	.37	1.6	.010	.02
JAN , 1979								
11...	.11	.00	.08	.08	.19	.84	.020	.00
11...	.12	.00	.05	.05	.17	.75	.020	.00
11...	.11	.00	.07	.07	.18	.80	.020	.00
11...	.14	.01	.06	.07	.21	.93	.020	.00
11...	.18	.01	.11	.12	.30	1.3	.020	.00
FEB								
06...	.20	.01	.02	.03	.23	1.0	.010	.00
06...	.15	.00	.06	.06	.21	.93	.000	.00
06...	.16	.01	.04	.05	.21	.93	.010	.00
06...	.15	.01	.05	.06	.21	.93	.000	.00
06...	.12	.00	.16	.16	.28	1.2	.000	.00
MAR								
06...	.59	.01	.11	.12	.71	3.1	.030	.00
06...	.33	.01	.08	.09	.42	1.9	.030	.00
06...	.21	.01	.07	.08	.29	1.3	.030	.00
06...	.20	.01	.09	.10	.30	1.3	.020	.00
06...	.20	.01	.06	.07	.27	1.2	.020	.00

14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
APR , 1979								
11...	1400	1.0	47	7.4	7.8	1.0	11.8	2
11...	1405	20	48	7.3	7.2	1.0	11.6	1
11...	1415	50	50	7.3	6.0	1.0	11.4	<1
11...	1420	100	49	7.2	5.6	2.0	11.2	<1
11...	1430	180	47	7.1	5.2	4.0	10.8	<1
MAY								
08...	1310	1.0	47	7.4	10.9	1.0	11.3	9
08...	1320	20	51	7.3	6.5	1.0	11.5	1
08...	1325	50	51	7.2	6.2	2.0	11.5	1
08...	1330	100	51	7.1	5.5	1.0	11.3	1
08...	1335	180	53	6.7	5.2	3.0	10.4	<1
JUN								
05...	1305	1.0	50	7.6	13.4	1.0	11.0	<1
05...	1320	20	51	7.4	11.9	1.0	11.8	1
05...	1330	50	50	7.2	11.4	1.0	11.6	<1
05...	1350	100	52	7.4	11.2	1.0	11.5	<1
05...	1355	180	53	7.2	10.4	2.0	10.5	<1
JUL								
10...	1300	1.0	52	7.5	15.8	1.0	10.8	<1
10...	1310	20	52	7.2	7.9	1.0	11.1	<1
10...	1315	50	53	7.2	7.5	1.0	11.0	1
10...	1325	100	53	7.2	6.7	1.0	11.0	<1
10...	1330	180	55	7.0	6.0	2.0	10.2	<1
AUG								
07...	1255	1.0	55	7.8	18.6	1.0	9.8	<1
07...	1305	20	56	7.4	9.2	1.0	12.0	<1
07...	1310	50	56	7.1	8.3	1.0	11.4	<1
07...	1315	100	57	7.1	7.1	.00	10.3	<1
07...	1320	180	57	7.0	6.4	1.0	10.7	<1
SEP								
11...	1335	1.0	57	7.2	17.0	.00	10.1	<1
11...	1340	20	53	7.2	8.9	1.0	9.8	<1
11...	1350	50	55	7.2	8.1	1.0	10.0	<1
11...	1355	100	56	7.3	6.9	.00	9.6	<1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
APR , 1979								
11...	.22	.01	.02	.03	.25	1.1	.010	.00
11...	.21	.01	.02	.03	.24	1.1	.010	.00
11...	.22	.01	.02	.03	.25	1.1	.010	.00
11...	.20	.01	.11	.12	.32	1.4	.010	.00
11...	.22	.04	.15	.19	.41	1.8	.010	.00
MAY								
08...	.25	.03	.05	.08	.33	1.5	.010	.00
08...	.16	.00	.05	.05	.21	.93	.000	.00
08...	.17	.00	.02	.02	.19	.84	.000	.00
08...	.18	.00	.04	.04	.22	.97	.000	.00
08...	.19	.00	.05	.05	.24	1.1	.010	.00
JUN								
05...	.11	.01	.05	.06	.17	.75	.010	.00
05...	.14	.01	.05	.06	.20	.89	.010	.00
05...	.15	.01	.03	.04	.19	.84	.010	.00
05...	.15	.01	.03	.04	.19	.84	.010	.00
05...	.19	.01	.00	.00	.19	.84	.040	--
JUL								
10...	.11	.02	.11	.13	.24	1.1	.010	.03
10...	.16	.02	.05	.07	.23	1.0	.010	.07
10...	.15	.02	.09	.11	.26	1.2	.010	.07
10...	.17	.02	.00	.01	.18	.80	.010	.05
10...	.18	.02	.00	.00	.18	.80	.010	.05
AUG								
07...	.02	.00	.10	.10	.12	.53	.010	.03
07...	.08	.00	.07	.07	.15	.66	.010	.01
07...	.11	.00	.08	.08	.19	.84	.010	.01
07...	.14	.00	.00	.00	.14	.62	.010	.01
07...	.15	.00	.00	.00	.15	.66	.010	.00
SEP								
11...	.04	.02	.33	.35	.39	1.7	.010	.04
11...	.10	.03	.34	.37	.47	2.1	.000	.01
11...	.13	.04	.32	.36	.49	2.2	.000	.01
11...	.15	.11	.28	.39	.54	2.4	.000	.01

14237800 MAYFIELD RESERVOIR NEAR SILVER CREEK, WA--Continued

WATER QUALITY DATA

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)
SEP , 1979								
11...	1400	180	56	7.4	6.5	1.0	9.2	<1

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)
SEP , 1979							
11...	.15	.01	.33	.34	.49	2.2	.000

14237900 MAYFIELD POWERPLANT TAILWATER NEAR SILVER CREEK, WA

LOCATION.--Lat 46°30'15", long 122°35'12", in SE¼SW¼ sec.20, T.12 N., R.2 E., Lewis County, Hyrologic Unit 17080005. Sampling site is at the downstream side of the powerhouse about 1.4 mi (2.3 km) upstream from gaging station (14238000).

PERIOD OF RECORD.--October 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from downstream gaging station; discharge values are good.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978 18...	0820	4140	48	7.1	10.3	1.0	10.7	<1
NOV 07...	1425	4430	51	7.4	9.6	1.0	10.4	8
DEC 05...	1425	10700	43	7.0	8.1	2.0	10.8	7
JAN , 1979 11...	1445	6320	40	7.6	4.8	2.0	12.5	31
FEB 06...	1540	3320	50	6.9	4.4	2.0	12.9	34
MAR 06...	1445	4500	51	7.0	5.5	2.0	12.7	1
APR 11...	1500	3030	49	7.6	7.2	1.0	11.5	10
MAY 08...	1410	3040	53	7.3	8.2	1.0	11.4	7
JUN 05...	1425	5550	50	7.0	8.0	2.0	11.8	5
JUL 10...	1400	2800	54	7.0	9.4	1.0	11.2	<1
AUG 07...	1345	2120	57	7.1	10.9	1.0	11.5	<1
SEP 11...	1435	2080	54	7.4	10.8	1.0	10.6	1

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT , 1978 18...	.04	.00	.25	.25	.29	1.3	.010	.01
NOV 07...	.06	.01	.49	.50	.56	2.5	.000	.00
DEC 05...	.18	.01	.15	.16	.34	1.5	.010	.01
JAN , 1979 11...	.12	.00	.05	.05	.17	.75	.020	.00
FEB 06...	.16	.01	.01	.02	.18	.80	.000	.00
MAR 06...	.25	.01	.06	.07	.32	1.4	.030	.01
APR 11...	.20	.01	.11	.12	.32	1.4	.010	.00
MAY 08...	.16	.00	.05	.05	.21	.93	.010	.00
JUN 05...	.13	.01	.05	.06	.19	.84	.010	--
JUL 10...	.20	.02	.00	.00	.20	.89	.010	.05
AUG 07...	.07	.00	.05	.05	.12	.53	.010	.00
SEP 11...	.08	.01	.38	.39	.47	2.1	.010	.01

14238000 COWLITZ RIVER BELOW MAYFIELD DAM, WA

LOCATION.--Lat 46°30'38", long 122°36'54", in SE¼NE¼ sec.24, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005, on right bank, 1.1 mi (1.8 km) upstream from fish barrier dam, 1.4 mi (2.3 km) downstream from Mayfield Dam, 1.5 mi (2.4 km) upstream from Mill Creek, 2.1 mi (3.4 km) downstream from Winston Creek, and at mile 50.6 (81.4 km).

DRAINAGE AREA.--1,400 mi^3 (3,626 km^2).

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--August to October 1910, December 1910 to September 1911, October to November 1911 (monthly discharge only), April 1934 to current year. Published as "at Mayfield" water years 1910-11 and "near Mayfield" water years 1934-61.

REVISED RECORDS.--WSP 1318: 1949(M). WSP 1348: Drainage area. WSP 1718: 1943, 1947.

GAGE.--Water-stage recorder. Datum of gage is 226.6 ft (69.07 m) National Geodetic Vertical Datum of 1929. August 1910 to November 1911 nonrecording gage at site 2.5 mi (4.0 km) upstream at different datum. Apr. 27 to July 2, 1934, nonrecording gage at present site and datum.

REMARKS.--Water-discharge records excellent. Flow regulated by Riffe Lake (see sta 14234800) at mile 65.5 (105.4 km) and Mayfield Reservoir (see sta 14237800) at mile 52.0 (83.7 km). Minor diversions for domestic and farm use above station. Tacoma City Light radio telemeter at station.

AVERAGE DISCHARGE.--45 years (water years 1935-79), 6,319 ft^3/s (179.0 m^3/s) 61.29 in/yr (1,557 mm/yr), 4,578,000 acre-ft/yr (5,640 hm^3/yr), adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 67,000 ft^3/s (1,900 m^3/s) Dec. 13, 1946, maximum gage height, 25.26 ft (7.699 m) Dec. 4, 1975; minimum, 37 ft^3/s (1.05 m^3/s) Apr. 16, 1962, gage height, 6.42 ft (1.957 m); minimum daily, 451 ft^3/s (12.8 m^3/s) Apr. 16, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 is known to have exceeded that of Dec. 13, 1946.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,700 ft^3/s (416 m^3/s) Feb. 7, gage height, 14.73 ft (4.490 m: minimum, 1,950 ft^3/s (55.2 m^3/s) July 20, gage height, 9.11 ft (2.777 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4080	4190	12900	7450	8490	5820	3120	3050	5950	3030	2060	2090
2	4100	4300	12800	7440	7180	3590	3120	3050	5590	3010	2050	2090
3	4100	4440	12200	7010	4810	3540	3090	3070	5570	3020	2070	2100
4	4100	4450	10700	7450	4240	3550	3050	3070	5510	3020	2070	2100
5	4080	4420	10700	8530	4760	7780	3040	3060	5540	3020	2060	2080
6	4140	4430	10600	6860	4440	6070	3070	3030	5560	3020	2070	2070
7	4120	4400	9630	6320	10000	3660	3050	3010	5540	2980	2080	2080
8	4140	4430	6880	7500	4060	3610	3050	3030	5570	2990	2070	2080
9	4140	4430	6230	6750	3970	3580	3050	3070	5540	3000	2070	2090
10	4130	4400	6250	6810	4130	3590	3040	3130	5560	2910	2080	2090
11	4120	4410	6270	6470	4910	3580	3060	3120	5550	2770	2080	2090
12	4110	4410	6200	5940	5540	3580	3050	3100	5450	2800	2080	2080
13	4100	4400	8900	6230	4840	3560	3050	3080	5200	2800	2090	2070
14	4100	4570	9350	6090	4630	3580	3050	3080	5000	2790	2090	2070
15	4100	6370	10800	6070	6380	3550	3060	3070	4850	2790	2090	2090
16	4110	6300	10900	6380	6590	3060	3060	3080	4640	2670	2090	2110
17	4130	6280	12900	6920	7470	3060	3040	4650	4450	2440	2090	2380
18	4140	6280	12900	6110	8050	3070	3020	6240	4240	2140	2090	2610
19	4140	6730	12900	4360	7770	3080	3020	6140	4070	2080	2100	2620
20	4130	9430	12200	4300	7250	3080	3020	6380	3970	2060	2090	2610
21	4140	9290	10700	4250	6700	3080	3040	6350	3780	2020	2090	2610
22	4140	9300	10200	4140	8650	3070	3060	6340	3540	2040	2090	2620
23	4140	9240	9210	4080	7490	3080	3080	7390	3330	2030	2090	2630
24	4150	9270	8500	4080	6450	3080	3070	8930	3280	2030	2090	2670
25	4170	9250	6180	5600	5130	3060	3030	9200	3110	2050	2100	2620
26	4150	10700	6300	4030	6350	3070	3000	9190	3010	2050	2090	2620
27	4150	10800	6250	4230	8000	3100	3010	9240	3020	2050	2100	2610
28	4160	10800	6840	4360	6750	3090	3030	9190	3030	2050	2100	2600
29	4180	10900	8010	6530	---	3110	3060	9160	3030	2060	2100	2590
30	4160	12800	7840	4760	---	3130	3060	8360	3040	2050	2110	2600
31	4170	---	8280	5820	---	3150	---	6780	---	2060	2100	---
TOTAL	128020	205420	290520	182870	175030	112010	91550	162640	135520	77830	64630	69770
MEAN	4130	6847	9372	5899	6251	3613	3052	5246	4517	2511	2085	2326
MAX	4180	12800	12900	8530	10000	7780	3120	9240	5950	3030	2110	2670
MIN	4080	4190	6180	4030	3970	3060	3000	3010	3010	2020	2050	2070
AC-FT	253900	407500	576200	362700	347200	222200	181600	322600	268800	154400	128200	138400
†	-171,827	-223,915	-203,600	-203,113	+87,783	+286,365	+176,018	+244,915	+9,502	+9,631	-30,641	-40,369
MEAN‡	1,334	3,086	6,058	2,595	7,834	8,270	6,011	9,228	4,678	2,667	1,586	1,648
CFSM‡	0.95	2.20	4.33	1.85	5.60	5.91	4.29	6.59	3.34	1.90	1.13	1.18
IN.‡	1.10	2.46	4.99	2.14	5.82	6.81	4.79	7.60	3.73	2.20	1.31	1.31
AC-FT‡	82,070	183,600	372,600	159,600	435,000	508,600	357,600	567,500	278,300	164,000	97,560	98,030

CAL YR 1978: TOTAL 1,803,560 MEAN 4,941 MAX 12,900 MIN 2,310 AC-FT 3,577,000
DO.....: MEAN‡ 4,528 CFSM‡ 3.23 IN.‡ 43.89 AC-FT‡ 3,278,000
WTR YR 1979: TOTAL 1,695,810 MEAN 4,646 MAX 12,900 MIN 2,020 AC-FT 3,364,000
DO.....: MEAN‡ 4,565 CFSM‡ 3.26 IN.‡ 44.25 AC-FT‡ 3,305,000

† Change in contents, in acre-feet, in Riffe Lake and Mayfield Reservoir.
‡ Adjusted for change in contents in Riffe Lake and Mayfield Reservoir.

14238000 COWLITZ RIVER BELOW MAYFIELD DAM, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1950 to current year.

INSTRUMENTATION.--Temperature recorder since October 1950.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Records represent water temperatures at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21. °C July 28, 29, 1958; minimum, 0.5°C Jan. 28 to Feb. 2, 1956.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 12.5°C Aug. 6, 8, 11, Sept. 1; minimum, 3.5°C Feb. 4-10, 13.

WATER QUALITY DATA

DATE	TIME	SEDIMENT, SUSPENDED (MG/L)
OCT , 1978		
17...	1315	4
NOV		
07...	1330	4
DEC		
05...	1240	2
JAN , 1979		
11...	1300	3
FEB		
06...	1310	3
MAR		
06...	1600	4
APR		
11...	1400	1
MAY		
08...	1315	1
JUN		
05...	1215	0
JUL		
10...	1510	2
AUG		
07...	1520	4
SEP		
11...	1525	2

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	11.5	10.0	10.5	---	---	---	8.5	8.5	8.5	5.0	5.0	5.0
2	11.5	10.0	10.5	---	---	---	8.5	8.5	8.5	5.0	5.0	5.0
3	11.0	9.5	10.0	---	---	---	8.5	8.5	8.5	5.0	4.5	5.0
4	10.5	10.0	10.0	---	---	---	8.5	8.0	8.0	5.0	4.5	4.5
5	10.5	10.0	10.0	---	---	---	8.0	8.0	8.0	4.5	4.5	4.5
6	10.5	9.5	10.0	---	---	---	8.0	7.5	8.0	4.5	4.0	4.5
7	11.0	10.0	10.5	---	---	---	7.5	7.5	7.5	4.0	4.0	4.0
8	11.5	10.5	11.0	---	---	---	7.5	7.5	7.5	4.0	4.0	4.0
9	---	---	---	---	---	---	7.5	7.0	7.5	4.0	4.0	4.0
10	---	---	---	---	---	---	7.5	7.5	7.5	4.5	4.0	4.0
11	10.5	10.0	10.5	---	---	---	8.0	7.5	7.5	4.5	4.0	4.5
12	10.5	10.0	10.0	---	---	---	7.5	7.5	7.5	4.5	4.5	4.5
13	10.5	9.5	10.0	---	---	---	7.0	7.0	7.0	4.5	4.5	4.5
14	9.5	9.5	9.5	---	---	---	7.0	7.0	7.0	4.5	4.5	4.5
15	10.5	9.5	10.0	---	---	---	7.0	7.0	7.0	4.5	4.5	4.5
16	10.5	10.5	10.5	---	---	---	7.0	7.0	7.0	4.5	4.5	4.5
17	10.5	9.5	10.5	---	---	---	7.0	7.0	7.0	4.5	4.5	4.5
18	10.5	10.0	10.0	---	---	---	7.0	6.5	7.0	4.5	4.5	4.5
19	---	---	---	---	---	---	7.0	6.5	7.0	4.5	4.5	4.5
20	---	---	---	---	---	---	7.0	7.0	7.0	4.5	4.5	4.5
21	---	---	---	---	---	---	7.0	7.0	7.0	4.5	4.5	4.5
22	---	---	---	---	---	---	7.0	6.5	7.0	4.5	4.5	4.5
23	---	---	---	---	---	---	7.0	6.5	7.0	4.5	4.5	4.5
24	---	---	---	---	---	---	7.0	6.5	6.5	4.5	4.5	4.5
25	---	---	---	8.5	8.5	8.5	6.5	6.5	6.5	4.5	4.5	4.5
26	---	---	---	9.0	8.5	8.5	6.5	6.0	6.0	4.5	4.5	4.5
27	---	---	---	8.5	8.5	8.5	6.5	6.0	6.5	4.5	4.5	4.5
28	---	---	---	8.5	8.5	8.5	6.5	6.0	6.5	4.5	4.5	4.5
29	---	---	---	9.0	8.5	8.5	6.0	6.0	6.0	4.5	4.5	4.5
30	---	---	---	8.5	8.5	8.5	6.0	5.5	5.5	4.5	4.0	4.5
31	---	---	---	---	---	---	5.5	5.0	5.5	4.0	4.0	4.0
MONTH	11.5	9.5	10.0	9.0	8.5	8.5	8.5	5.0	7.0	5.0	4.0	4.5

142380 COWLITZ RIVER BELOW MAYFIELD DAM, WA--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	4.0	4.0	4.0	4.5	4.5	4.5	7.0	6.0	6.5	8.0	7.0	7.5
2	4.0	4.0	4.0	5.0	4.5	4.5	7.0	7.0	7.0	9.5	8.0	8.5
3	4.0	4.0	4.0	4.5	4.5	4.5	7.0	6.5	6.5	9.5	8.0	9.0
4	4.0	3.5	3.5	4.5	4.5	4.5	7.0	6.5	6.5	10.0	7.5	8.5
5	3.5	3.5	3.5	4.5	4.5	4.5	8.0	7.0	7.5	9.5	8.5	9.5
6	3.5	3.5	3.5	4.5	4.5	4.5	7.0	6.0	6.5	9.0	7.0	8.0
7	3.5	3.5	3.5	5.0	4.5	5.0	7.5	6.0	6.5	8.5	7.5	8.0
8	3.5	3.5	3.5	5.0	4.5	5.0	7.5	6.5	7.0	9.5	8.0	8.5
9	3.5	3.5	3.5	5.5	4.5	5.0	7.0	6.0	6.5	8.5	7.5	8.0
10	4.0	3.5	4.0	5.5	5.5	5.5	7.0	6.0	6.5	9.0	7.5	8.5
11	4.0	4.0	4.0	6.0	5.5	6.0	7.0	6.5	7.0	9.0	8.5	9.0
12	4.0	4.0	4.0	6.0	5.5	5.5	7.0	6.0	6.5	9.0	8.0	8.5
13	4.0	3.5	4.0	5.5	5.0	5.5	6.0	5.5	6.0	9.0	8.0	8.5
14	4.0	4.0	4.0	6.5	5.5	6.0	6.5	6.0	6.0	9.5	8.5	8.5
15	4.5	4.0	4.0	6.0	6.0	6.0	7.0	6.5	6.5	9.5	8.0	8.5
16	4.5	4.0	4.0	6.0	6.0	6.0	7.0	6.5	7.0	10.0	8.0	9.0
17	4.5	4.5	4.5	6.5	5.5	6.0	7.0	6.5	6.5	9.5	8.0	9.0
18	4.5	4.5	4.5	6.0	5.5	6.0	7.0	6.5	6.5	8.5	7.0	8.0
19	4.5	4.5	4.5	6.5	5.5	6.5	7.5	7.0	7.0	9.0	7.5	8.5
20	4.5	4.5	4.5	7.0	6.0	6.5	8.0	7.0	7.5	9.5	8.0	8.5
21	4.5	4.5	4.5	7.0	5.5	6.5	8.0	7.5	8.0	9.5	7.5	8.5
22	4.5	4.5	4.5	8.0	6.0	7.0	8.5	7.0	8.0	8.5	7.0	8.0
23	4.5	4.5	4.5	7.5	7.0	7.5	8.0	6.0	7.0	8.5	7.0	8.0
24	4.5	4.5	4.5	7.5	5.5	7.0	8.0	6.0	7.0	7.5	6.5	7.0
25	4.5	4.5	4.5	6.5	5.5	6.0	8.0	7.5	8.0	8.5	7.0	7.5
26	4.5	4.5	4.5	7.0	5.5	6.0	10.0	8.0	9.0	7.5	6.5	7.0
27	4.5	4.5	4.5	7.5	7.0	7.5	9.0	6.5	8.0	7.5	6.5	7.0
28	4.5	4.5	4.5	7.5	6.0	7.0	9.0	7.5	8.0	7.5	6.5	7.0
29	---	---	---	6.5	6.0	6.0	9.5	8.0	8.5	8.5	7.0	7.5
30	---	---	---	6.5	6.0	6.0	9.5	7.5	8.5	9.0	7.0	7.5
31	---	---	---	6.5	6.0	6.0	---	---	---	9.0	7.0	7.5
MONTH	4.5	3.5	4.0	8.0	4.5	6.0	10.0	5.5	7.0	10.0	6.5	8.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.5	7.0	7.5	9.0	7.5	8.0	12.0	10.5	11.0	12.5	10.0	11.5
2	8.5	7.0	8.0	11.0	8.0	9.5	11.5	10.0	11.0	11.5	10.5	11.0
3	8.5	7.0	8.0	10.5	9.5	10.0	11.5	10.0	11.0	11.0	10.0	11.0
4	9.0	7.0	8.0	10.5	9.5	10.0	12.0	10.5	11.0	11.0	10.0	10.5
5	8.5	7.5	8.0	10.5	10.0	10.0	12.0	10.0	11.0	12.0	10.5	11.0
6	8.0	6.5	7.0	10.5	9.0	10.0	12.5	10.5	11.5	11.0	10.5	10.5
7	9.5	6.5	8.0	11.0	9.5	10.0	12.0	10.0	11.5	11.0	10.0	10.5
8	9.0	8.0	8.5	11.0	9.0	10.5	12.5	10.0	11.0	10.5	9.5	10.0
9	9.0	7.5	8.0	10.5	9.0	10.0	11.5	10.0	11.0	11.5	10.0	10.5
10	8.0	7.5	8.0	10.0	8.0	9.0	11.5	10.0	11.0	11.5	10.0	11.0
11	9.0	7.5	8.0	11.0	8.5	10.0	12.5	10.5	11.5	12.0	10.5	11.0
12	9.5	7.5	8.5	11.0	9.5	10.5	11.5	11.0	11.0	11.0	10.0	10.5
13	9.5	7.5	8.5	11.0	9.5	10.0	12.0	10.5	11.0	11.0	10.0	10.5
14	9.5	8.0	8.5	11.0	9.5	10.5	11.5	11.0	11.5	12.0	10.0	11.0
15	9.5	8.0	8.5	11.0	10.0	10.5	11.0	10.0	10.5	11.0	10.5	10.5
16	9.5	8.0	8.5	11.0	10.0	10.5	11.5	10.0	10.5	11.5	10.5	11.0
17	8.5	7.5	8.0	11.5	10.0	11.0	11.5	11.0	11.0	11.5	10.5	11.0
18	9.0	7.0	8.0	11.0	9.5	10.0	11.5	10.5	11.0	11.0	10.0	11.0
19	8.0	7.0	7.5	12.0	9.5	10.5	11.5	10.5	11.0	10.5	10.0	10.0
20	9.5	7.5	8.5	11.5	9.5	11.0	11.0	10.0	10.5	11.0	10.0	11.0
21	9.0	7.5	8.5	11.5	9.5	10.5	11.5	10.5	11.0	11.0	9.5	10.0
22	9.0	7.5	8.5	11.0	10.0	10.5	11.0	10.0	10.5	11.0	10.0	10.5
23	9.0	8.0	8.5	12.0	10.0	11.0	11.0	10.0	10.5	11.0	10.0	10.5
24	10.0	8.0	9.0	11.5	9.5	10.5	11.5	10.5	11.0	10.5	9.5	10.0
25	10.0	8.5	9.0	11.5	9.5	10.0	11.0	10.0	10.5	11.0	9.5	10.0
26	10.0	8.5	9.0	11.0	10.0	10.5	11.0	9.5	10.5	11.0	9.5	10.0
27	11.0	9.0	9.5	11.5	9.5	10.5	11.0	10.0	10.5	11.0	10.5	10.5
28	10.5	9.0	9.5	11.5	9.5	10.5	11.5	10.0	11.0	11.0	10.0	10.5
29	10.0	8.5	9.5	12.0	10.5	11.0	10.5	9.0	10.0	10.5	10.0	10.5
30	10.0	8.0	9.0	12.0	10.0	11.0	11.0	10.0	10.5	10.5	9.0	10.0
31	---	---	---	12.0	10.5	11.5	11.5	9.5	10.5	---	---	---
MONTH	11.0	6.5	8.5	12.0	7.5	10.5	12.5	9.0	11.0	12.5	9.0	10.5
YEAR	12.5	3.5	8.0									

14238020 COWLITZ RIVER BELOW MILL CREEK HATCHERY NEAR SALKUM, WA

LOCATION.--Lat 46°30'31", long 122°37'15", in NW¼SE¼ sec.24, T.12 N., T.1 E., Lewis County, Hydrologic Unit 17080005. Sampling site about 1,000 ft (305 m) downstream from fish barrier dam and 0.8 mi (1.3 km) downstream from gaging station (14238000).

PERIOD OF RECORD.--Wate. years 1974 to current year.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978 17...	1225	4160	48	7.3	10.9	1.0	--	<1
NOV 07...	1225	4390	48	7.6	10.3	1.0	11.5	7
DEC 05...	1150	10700	44	6.8	8.2	1.0	11.4	4
JAN , 1979 11...	1320	6320	47	7.4	4.8	2.0	12.7	15
FEB 06...	1235	3440	51	7.2	4.4	2.0	12.9	8
MAR 06...	1350	5530	50	7.5	5.6	2.0	13.5	3
APR 11...	1220	3080	49	7.5	7.4	1.0	12.2	<1
MAY 08...	1210	3010	48	7.3	8.6	1.0	12.1	4
JUN 05...	1125	5530	54	7.3	8.4	1.0	12.0	1
JUL 10...	1355	3010	53	7.2	9.4	1.0	11.8	1
AUG 07...	1425	2080	51	7.3	12.4	1.0	11.0	1
SEP 11...	1420	2070	53	7.5	12.0	1.0	11.1	<1

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT , 1978 17...	.01	.00	.50	.50	.51	2.3	.010	.01
NOV 07...	.07	.02	.03	.05	.12	.53	.020	--
DEC 05...	.19	.01	.07	.08	.27	1.2	.010	.01
JAN , 1979 11...	.12	.00	.03	.03	.15	.66	.020	.00
FEB 06...	.18	.02	.07	.09	.27	1.2	.000	.00
MAR 06...	.26	.01	.10	.11	.37	1.6	.030	.01
APR 11...	.22	.01	.15	.16	.38	1.7	.020	.01
MAY 08...	.17	.00	.05	.05	.22	.97	.010	.00
JUN 05...	.13	.01	.08	.09	.22	.97	.020	.00
JUL 10...	.13	.02	.03	.05	.18	.80	.220	.05
AUG 07...	.06	.01	.09	.10	.16	.71	.010	.00
SEP 11...	.08	.03	.38	.41	.49	2.2	.010	.01

14238545 BLUE CREEK HATCHERY TROUT POND NEAR TOLEDO, WA

LOCATION.--Lat 46°29'07", long 122°43'38", in SW¼NE¼ sec.31, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005. Sampling site is in second shoreward trout rearing pond from right bank of Cowlitz River.

PERIOD OF RECORD.--Water year October 1977 to current year.

WATER QUALITY DATA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT , 1978								
17...	1040	49	6.9	11.7	1.0	9.8	<1	.03
NOV								
07...	1100	52	7.4	9.8	1.0	10.2	4	.04
DEC								
05...	1100	47	6.7	7.3	1.0	9.6	5	.15
JAN , 1979								
11...	1430	49	7.1	4.8	2.0	11.3	K810	.13
FEB								
06...	1130	47	7.2	4.7	3.0	11.4	19	.16
MAR								
06...	1220	49	7.2	6.6	2.0	11.1	1	.32
APR								
11...	1120	53	7.4	7.4	2.0	10.9	1	.21
MAY								
08...	1045	52	7.3	9.7	2.0	10.7	7	.20
AUG								
07...	1320	56	7.1	14.6	1.0	11.4	<1	.08
SEP								
11...	1310	56	7.4	13.7	1.0	10.8	1	.06

DATE	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT , 1978							
17...	.10	.51	.61	.64	2.8	.080	.01
NOV							
07...	.02	.20	.22	.26	1.2	.040	.00
DEC							
05...	.11	.14	.25	.40	1.8	.060	.02
JAN , 1979							
11...	.02	.14	.16	.29	1.3	.040	.00
FEB							
06...	.08	.07	.15	.31	1.4	.020	.00
MAR							
06...	.09	.17	.26	.58	2.6	.040	.02
APR							
11...	.11	.16	.27	.48	2.1	.040	.00
MAY							
08...	.10	.16	.26	.46	2.0	.030	.03
AUG							
07...	.04	.27	.31	.39	1.7	.030	.00
SEP							
11...	.04	.49	.53	.59	2.6	.040	.01

K.--Results based upon colony counts outside the ideal range.

14238550 COWLITZ RIVER ABOVE BLUE CREEK NEAR TOLEDO, WA

LOCATION.--Lat 46°29'02", long 122°43'47", in SE¼NW¼ sec.31, T.12 N., R.1 E., Lewis County, Hydrologic Unit 17080005, 0.5 mi (0.8 km) upstream from Blue Creek, 6.2 mi (10.0 km) northeast of Toledo, and at mile 41.8 (67.3 km).

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Water discharge obtained by routing flow from upstream gaging station; discharge value is good.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT , 1978								
17...	1125	4230	46	7.7	10.5	1.0	12.1	1
NOV								
07...	1120	4520	49	7.7	10.6	1.0	12.2	4
DEC								
05...	1120	10800	46	6.4	8.2	1.0	11.8	12
JAN , 1979								
11...	1410	6460	49	7.5	4.9	2.0	12.9	58
FEB								
06...	1200	3840	48	7.3	4.2	7.0	12.9	100
MAR								
06...	1255	6890	49	7.5	5.7	3.0	13.5	1
APR								
11...	1055	3260	48	7.6	7.4	1.0	12.5	6
MAY								
08...	1110	3260	49	7.5	8.6	1.0	12.1	5
JUN								
05...	1040	5660	54	7.0	8.8	1.0	12.3	1
JUL								
10...	1120	3120	52	7.4	9.1	1.0	11.8	<1
AUG								
07...	1350	2130	52	7.4	14.2	1.0	11.1	1
SEP								
11...	1340	2120	53	7.5	13.2	1.0	11.3	<1

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT , 1978								
17...	.04	.01	.25	.26	.30	1.3	.000	.01
NOV								
07...	.04	.01	.04	.05	.09	.40	.000	.00
DEC								
05...	.20	.01	.06	.07	.27	1.2	.010	.01
JAN , 1979								
11...	.13	.00	.03	.03	.16	.71	.020	.00
FEB								
06...	.24	.01	.12	.13	.37	1.6	.010	.00
MAR								
06...	.27	.02	.09	.11	.38	1.7	.030	.00
APR								
11...	.23	.01	.11	.12	.35	1.6	.010	.00
MAY								
08...	.17	.00	.11	.11	.28	1.2	.000	.00
JUN								
05...	.10	.01	.00	.00	.10	.44	.070	.00
JUL								
10...	.13	.02	.11	.13	.26	1.2	.010	.05
AUG								
07...	.05	.00	.09	.09	.14	.62	.010	.00
SEP								
11...	.08	.01	.58	.59	.67	3.0	.010	.01

14238800 COWLITZ RIVER AT TOLEDO, WA

LOCATION.--Lat 46°26'19", long 122°50'35", in SW¼NW¼ sec.17, T.11 N., R.1 W., Lewis County, Hydrologic Unit 17080003, on right bank, at State Highway 505 bridge in Toledo, and at mile 33.7 (54.2 km).

DRAINAGE AREA.--1,461 mi² (3,784 km²).

PERIOD OF RECORD.--1975, 1977 to current year.

REMARKS.--Water discharge from rating, discharge value is good.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)
OCT , 1978 17...	0950	4300	76	7.3	10.2	5	1.0	11.0	2
NOV 07...	1000	4650	71	7.6	10.2	5	1.0	11.1	5
DEC 05...	1015	10900	50	6.4	7.8	10	2.0	11.6	14
JAN , 1979 11...	1515	6600	57	7.5	4.7	--	2.0	12.5	12
FEB 06...	1015	4240	65	7.6	4.2	--	5.0	12.9	17
MAR 06...	1115	6650	50	--	5.8	10	2.0	12.8	3
APR 11...	1000	3480	58	8.0	7.4	--	1.0	12.1	6
MAY 08...	0935	3500	55	7.3	8.6	10	2.0	11.5	10
JUN 05...	0920	5780	57	7.2	8.8	5	1.0	11.8	4
JUL 10...	1250	3240	72	7.2	9.8	5	2.0	11.2	5
AUG 07...	1205	2180	84	6.9	13.4	5	1.0	11.8	<1
SEP 11...	1220	2160	93	7.5	7.5	--	--	11.1	--

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	SEDI-MENT, SUS-PENDED (MG/L)
OCT , 1978 17...	.04	.01	.33	.34	.38	1.7	.010	--	1
NOV 07...	.05	.01	.10	.11	.16	.71	.000	.00	4
DEC 05...	.22	.01	.18	.19	.41	1.8	.010	.01	10
JAN , 1979 11...	.12	.00	.07	.07	.19	.84	.020	.00	3
FEB 06...	.23	.00	.12	.12	.35	1.6	.030	.01	11
MAR 06...	.26	.02	.09	.11	.37	1.6	.010	.01	6
APR 11...	.25	.01	.12	.13	.38	1.7	.120	.05	2
MAY 08...	.17	.01	.05	.06	.23	1.0	.010	.00	1
JUN 05...	.12	.01	.01	.02	.14	.62	.010	.02	1
JUL 10...	.14	.01	.05	.06	.20	.89	.010	.05	3
AUG 07...	.05	.00	.14	.14	.19	.84	.010	.00	6
SEP 11...	.07	.01	.45	.46	.53	2.3	.010	.01	3

14242500 TOUTLE RIVER NEAR SILVER LAKE, WA

LOCATION.--Lat 46°20'11", long 122°43'27", in NW¼SE¼ sec.19, T.10 N., R.1 E., Cowlitz County, Hydrologic Unit 17080005, on right bank, 0.8 mi (1.3 km) downstream from confluence of North and South Forks, 4.9 mi (7.9 km) northeast of Silver Lake, and at mile 16.4 (26.4 km).

DRAINAGE AREA.--474 mi² (1,228 km²).

PERIOD OF RECORD.--September 1909 to August 1912, October 1919 to October 1921, May 1922 to December 1923, September 1929 to current year. Published as "near Castle Rock" 1909-12. Water temperatures October 1950 to September 1962, October 1963 to September 1972.

REVISED RECORDS.--WSP 292: 1909. WSP 754: 1930-32. WSP 1348: 1910(M), 1930-32(M), 1945.

GAGE.--Water-stage recorder. Datum of gage is 407.3 ft (124.15 m) National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Aug. 4, 1912, nonrecording gage at site 2.0 mi (3.2 km) downstream at datum 307.3 ft (93.67 m) National Geodetic Vertical Datum of 1929. Oct. 9, 1919, to Dec. 14, 1923, water-stage recorder at site 300 ft (91 m) downstream at different datum. Sept. 25, 1929, to Apr. 17, 1952, water-stage recorder at two sites within 50 ft (15 m) of present site at present datum.

REMARKS.--Records good. No regulation or diversion above station. Tacoma City Light radio telemeter at station.

AVERAGE DISCHARGE.--55 years (water years 1910-11, 1920-21, 1923, 1930-79) 2,056 ft³/s (58.23 m³/s) 58.90 in/yr (1,496 mm/yr), 1,490,000 acre-ft/yr (1,840 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,200 ft³/s (1,220 m³/s) Dec. 2, 1977, gage height, 22.56 ft (6.876 m), from rating curve extended above 26,000 ft³/s (736 m³/s) on basis of slope-area measurement at 20.90 ft (6.370 m); maximum gage height recorded, 22.7 ft (6.92 m) Dec. 23, 1933; minimum discharge, 240 ft³/s (6.80 m³/s) Nov. 21, 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 9,000 ft³/s (255 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 7	0230	*16,400	464	*12.61	3.844

Minimum discharge, 400 ft³/s (11.3 m³/s) Aug. 11, 12, 13, gage height, 1.57 ft (0.479 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	650	496	4320	970	630	2420	1400	2060	1190	1130	466	472
2	615	478	3260	930	610	2110	1970	1980	1270	1150	454	1000
3	587	706	2610	890	728	2180	1980	1850	1370	934	443	1730
4	568	1700	4140	860	1040	3580	1830	2120	1380	832	438	1260
5	556	1270	3690	830	1970	7640	1870	3650	1340	792	432	961
6	538	997	2820	800	3980	6340	1910	4180	1300	760	427	816
7	526	872	2260	780	11500	5820	1910	3440	1190	744	421	713
8	520	1340	1920	760	5850	4470	1820	2870	1080	713	416	784
9	514	1270	1760	800	5470	3510	1950	2500	1040	706	416	961
10	520	1070	1660	1210	5450	2900	1940	2220	1050	808	410	776
11	520	916	2580	1120	5450	2550	2020	2010	1100	760	410	692
12	508	840	2310	1030	6070	2320	2220	1870	1110	729	405	650
13	496	768	1990	979	7000	2130	3580	1820	1060	685	405	608
14	484	720	1990	934	5280	2010	3400	1830	988	657	443	574
15	478	699	1990	898	3850	2150	2970	1900	934	636	454	556
16	472	792	1780	856	3190	2160	2740	1900	916	622	438	544
17	472	1240	1720	832	2940	1950	2720	1790	979	608	449	532
18	472	1140	1610	792	3620	1790	2580	1730	1010	601	466	514
19	460	1620	1410	784	3060	1660	2420	1710	970	594	496	508
20	454	1300	1300	952	2660	1550	2180	1650	961	574	538	514
21	466	1140	1330	1330	2420	1480	2010	1660	889	562	544	508
22	454	1040	1460	1270	2190	1400	1920	1700	832	556	556	490
23	438	934	1500	1140	2050	1350	1880	1790	808	538	484	478
24	454	889	2340	1090	2120	1330	2110	1770	800	532	472	478
25	454	856	2280	988	2630	1320	1990	1660	808	520	432	466
26	438	824	1940	916	3330	1270	1940	1660	808	508	416	460
27	432	800	1730	898	3130	1300	2060	1640	792	496	421	454
28	438	1550	1480	856	2770	1370	2150	1610	768	490	421	466
29	636	1580	1250	800	---	1260	2110	1540	768	490	410	460
30	622	2900	1100	700	---	1260	2060	1320	808	478	421	443
31	532	---	1020	660	---	1270	---	1210	---	472	443	---
TOTAL	15774	32747	64550	28655	100988	75850	65640	62640	30319	20676	13847	19868
MEAN	509	1092	2082	924	3607	2447	2188	2021	1011	667	447	662
MAX	650	2900	4320	1330	11500	7640	3580	4180	1380	1150	556	1730
MIN	432	478	1020	660	610	1260	1400	1210	768	472	405	443
CFSM	1.07	2.30	4.39	1.95	7.61	5.16	4.62	4.26	2.13	1.41	.94	1.40
IN.	1.24	2.57	5.07	2.25	7.93	5.95	5.15	4.92	2.38	1.62	1.09	1.56
AC-FT	31290	64950	128000	56840	200300	150400	130200	124200	60140	41010	27470	39410

CAL YR 1978 TOTAL 542150 MEAN 1485 MAX 5120 MIN 432 CFSM 3.13 IN 42.55 AC-FT 1075000
WTR YR 1979 TOTAL 531554 MEAN 1456 MAX 11500 MIN 405 CFSM 3.07 IN 41.72 AC-FT 1054000

14242700 TOUTLE RIVER NEAR CASTLE ROCK, WA

LOCATION.--Lat 46°18'40", long 122°54'45", in SW¼NE¼ sec.34, T.10 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, at bridge on Interstate 5, 2.5 mi (4.0 km) north of Castle Rock, and at mile 0.3 (0.5 km).

DRAINAGE AREA.--512 mi² (1,326 km²).

PERIOD OF RECORD.--Water years 1960-71, 1974-75, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from upstream gaging station; discharge value is good. Prior to October 1971, at site 0.7 mi (1.1 km) upstream.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data furnished by the Washington State Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM COBALT UNITS)	TURBIDITY (NTU)
OCT , 1978 09...	1540	520	70	7.6	14.2	15	3.0
NOV 06...	1400	1020	59	7.4	6.0	25	11
DEC 04...	1445	4560	41	7.3	6.6	60	50
JAN , 1979 29...	1630	811	55	7.6	1.2	20	4.0
FEB 20...	1445	2660	47	7.2	4.3	25	8.0
MAR 12...	1420	2480	45	7.4	7.4	30	3.0
APR 16...	1450	2960	44	7.4	7.1	25	4.0
MAY 21...	1415	1750	50	7.6	14.3	15	3.0
JUN 18...	1415	1040	53	7.5	13.4	20	1.0
JUL 09...	1445	712	60	7.8	19.6	30	2.0
AUG 06...	1445	430	81	7.9	19.8	20	10
SEP 04...	1500	1310	58	7.4	14.0	75	220

DATE	OXYGEN, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4)
OCT , 1978 09...	10.6	.01	.01	.030	.00	.00
NOV 06...	12.1	.19	.01	.040	.01	.03
DEC 04...	12.6	.38	.01	.150	.02	.06
JAN , 1979 29...	14.3	.17	.06	.020	.05	.15
FEB 20...	13.2	.33	.01	.010	.01	.03
MAR 12...	12.5	.17	.01	.010	.01	.03
APR 16...	12.3	.17	.01	.010	.00	.00
MAY 21...	11.1	.08	.00	.010	.00	.00
JUN 18...	11.2	.05	.04	.200	.00	.00
JUL 09...	9.5	.01	.02	.010	.01	.03
AUG 06...	9.7	.02	.00	.030	.01	.03
SEP 04...	9.8	.15	.02	.360	.03	.09

14243000 COWLITZ RIVER AT CASTLE ROCK, WA

LOCATION.--Lat 46°16'30", long 122°54'48", in SW¼SE¼ sec.10, T.9 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, on right bank 40 ft (12 m) downstream from Arkansas Valley Road bridge in Castle Rock, 2.7 mi (4.3 km) downstream from Toutle River and at mile 17.3 (27.8 km).

DRAINAGE AREA.--2,238 mi² (5,796 km²).

PERIOD OF RECORD.--December 1926 to current year. Chemical analyses (water years (1950-73, 1975-78), water temperatures August 1950 to September 1973.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1638: 1947(P), 1951.

CORRECTIONS.--WRD Wash 1974: 1973 adjusted figures.

GAGE.--Water-stage recorder. Datum of gage is 20.20 ft (6.157 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 18, 1933, nonrecording gage at site 2 mi (3.2 km) upstream at datum 14.93 ft (4.551 m) higher. Dec. 18, 1933, to June 13, 1934, nonrecording gage and June 14 to Sept. 30, 1934, water-stage recorder, at present site at datum 5.0 ft (1.52 m) higher.

REMARKS.--Records excellent. Flow regulated by Riffe Lake (see sta 14234800) at mile 65.5 (105.4 km), and Mayfield Reservoir (see sta 14237800) at mile 52.0 (83.7 km). Minor diversions for domestic and farm use above station. Tacoma City Light radio telemeter at station.

AVERAGE DISCHARGE.--52 years, 9,248 ft³/s (261.9 m³/s) 56.12 in/yr (1,425 mm/yr), 6,700,000 acre-ft/yr (8,260 hm³/yr), adjusted for storage in Mayfield Reservoir since April 1962, and Riffe Lake since April 1968.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 139,000 ft³/s (3,940 m³/s) Dec. 23, 1933, gage height, 31.6 ft (9.63 m) present datum, from rating curve extended above 80,000 ft³/s (2,270 m³/s); minimum, 998 ft³/s (28.3 m³/s) Nov. 7, 8, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 39,400 ft³/s (1,120 m³/s) Feb. 7, gage height, 17.36 ft (5.291 m); minimum, 2,380 ft³/s (67.4 m³/s) on all or part of Aug. 28-31, gage height, 8.67 ft (2.643 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4950	4830	19500	8830	9000	10300	5000	5480	7320	4220	2580	2430
2	4890	4810	17100	8890	7520	7780	5510	5420	6830	4460	2550	2580
3	4860	5130	15700	7610	6430	6870	5900	5300	7040	4250	2530	4010
4	4860	6400	15700	8310	5990	8410	5570	5390	7040	4100	2530	3440
5	4840	6400	15500	8730	7660	16400	5510	6830	7010	4040	2530	3080
6	4830	5810	14000	8670	9350	16600	5480	8370	6970	3980	2530	2850
7	4810	5550	13100	7360	30900	11700	5480	7810	6870	3980	2500	2730
8	4800	5740	9760	7410	15400	9880	5330	6800	6740	3950	2480	2730
9	4800	5990	8570	8160	12100	8510	5480	6230	6680	3890	2480	2980
10	4800	5740	8380	7700	11800	7680	5630	5930	6650	3920	2450	2800
11	4790	5570	9720	8160	13000	7040	5690	5660	6650	3860	2450	2700
12	4780	5480	9650	7540	14600	6710	5900	5480	6680	3770	2450	2630
13	4750	5410	10400	7420	15900	6590	7530	5360	6470	3710	2430	2580
14	4730	5340	11500	7420	12800	6440	7640	5300	6200	3650	2450	2530
15	4720	6150	12500	7250	11400	6440	6870	5330	6020	3590	2530	2530
16	4720	6900	12500	7400	11000	6110	6500	5330	5810	3590	2530	2500
17	4720	7370	13700	7750	11500	5750	6590	5690	5660	3410	2500	2550
18	4740	7500	14000	7920	14000	5510	6380	7810	5540	3150	2530	2950
19	4730	8620	13800	5740	12400	5330	6200	7780	5300	2930	2580	3000
20	4730	10200	13500	5700	11900	5240	5930	7850	5210	2830	2680	3000
21	4730	10500	11700	6200	10500	5150	5690	7950	5030	2750	2650	2980
22	4720	10300	11900	6460	11600	5090	5540	7990	4760	2730	2700	2980
23	4720	10100	11000	5980	10400	5000	5450	8370	4520	2700	2600	2980
24	4720	9920	11700	5910	10800	4940	5600	9950	4370	2700	2500	3000
25	4740	9890	9530	6180	10200	4910	5480	10400	4310	2680	2450	2980
26	4730	10500	8930	6430	10800	4880	5360	10400	4070	2680	2420	2950
27	4710	11000	8680	5440	12600	4880	5420	10500	4040	2680	2400	2930
28	4720	11900	8530	5620	11400	5060	5510	10500	4040	2650	2400	2950
29	4870	12400	8990	7040	---	4970	5540	10400	4010	2650	2380	2930
30	5010	15900	9000	6300	---	4910	5480	9980	4040	2650	2380	2930
31	4890	---	9220	5570	---	4940	---	8130	---	2630	2380	---
TOTAL	148410	237350	367760	221180	332950	220020	175190	229720	171880	104780	77550	86210
MEAN	4787	7912	11860	7135	11890	7097	5840	7410	5729	3380	2502	2874
MAX	5010	15900	19500	8890	30900	16600	7640	10500	7320	4460	2700	4010
MIN	4710	4810	8380	5440	5990	4880	5000	5300	4010	2630	2380	2430
AC-FT	294400	470800	729500	438700	660400	436400	347500	455600	340900	207800	153800	171000
†	-171,827	-223,915	-203,600	-203,113	+87,783	+286,365	+176,018	+244,915	+9,502	+9,631	-30,641	-40,369
MEAN‡	1,993	4,150	8,551	3,831	13,480	11,750	8,800	11,390	5,890	3,535	2,003	2,195
CFSM‡	0.89	1.85	3.82	1.71	6.02	5.25	3.93	5.09	2.63	1.58	0.89	0.98
IN.‡	1.03	2.07	4.41	1.97	6.27	6.06	4.39	5.87	2.94	1.82	1.03	1.09
AC-FT‡	122,600	246,900	525,900	235,600	748,200	722,800	523,500	700,500	350,400	217,400	123,200	130,600

CAL YR 1978: TOTAL 2,530,160 MEAN 6,932 MAX 19,500 MIN 2,900 AC-FT 5,019,000
DO.....: MEAN‡ 6,520 CFSM‡ 2.91 IN.‡ 39.54 AC-FT‡ 4,720,000
WTR YR 1979: TOTAL 2,373,000 MEAN 6,501 MAX 30,900 MIN 2,380 AC-FT 4,707,000
DO.....: MEAN‡ 6,420 CFSM‡ 2.87 IN.‡ 38.94 AC-FT‡ 4,648,000

† Change in contents, in acre-feet, in Riffe Lake and Mayfield Reservoir.
‡ Adjusted for change in contents in Riffe Lake and Mayfield Reservoir.

14244200 COWLITZ RIVER AT KELSO, WA
(National Stream Quality Accounting Network Station)

LOCATION.--Lat 46°08'44", long 122°54'47", near center of SE¼ sec.27, T.8 N., R.2 W., Cowlitz County, Hydrologic Unit 17080005, at Main Street bridge between Kelso and West Kelso, 3.6 mi (5.8 km) upstream from Coweman River, and at mile 4.9 (7.9 km).

DRAINAGE AREA.--2,349 mi² (6,084 km²).

PERIOD OF RECORD.--Water years, 1960-66, 1971-75, 1977 to current year.

REMARKS.--Water discharge obtained by routing flow from upstream station; discharge value is fair.

COOPERATION.--Temperature, dissolved oxygen, pH, turbidity, color, and specific conductance data prior to January 1978 furnished by Washington Department of Ecology.

WATER QUALITY DATA

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT , 1978											
16...	1250	5600	70	7.6	13.4	1.5	10.7	6	6	24	2
NOV											
01...	1210	5800	73	7.5	9.1	1.5	11.3	2	5	23	1
DEC											
04...	1330	16500	53	7.0	8.0	7.5	11.3	20	83	18	0
JAN , 1979											
02...	1330	9800	59	7.6	2.0	1.8	13.4	2	2	20	0
FEB											
01...	1500	7000	48	7.2	3.0	2.5	12.8	6	3	22	1
MAR											
01...	1450	12800	49	7.3	5.5	5.0	12.3	6	2	20	5
APR											
10...	1130	6600	55	7.2	7.4	2.4	11.9	29	78	19	0
MAY											
09...	1130	7400	45	7.0	10.6	22	11.2	34	5	16	1
JUN											
06...	0950	8100	49	7.5	11.5	1.2	11.0	13	8	19	0
JUL											
12...	1630	4600	65	7.0	13.9	1.3	10.5	5	<1	21	3
AUG											
21...	1400	3300	89	7.7	15.6	2.3	9.6	63	122	0	0
SEP											
19...	1220	3700	106	7.5	14.4	2.0	10.0	27	6	31	6

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT , 1978											
16...	7.3	1.4	6.1	35	.5	.4	22	4.1	8.9	.1	14
NOV											
01...	7.1	1.3	6.0	36	.5	.4	22	3.6	8.5	.1	13
DEC											
04...	5.4	1.1	3.6	30	.4	.5	21	.1	4.1	.0	14
JAN , 1979											
02...	5.9	1.2	3.9	30	.4	.4	21	3.1	4.0	.0	14
FEB											
01...	6.3	1.4	3.6	26	.3	.4	21	3.3	2.2	.1	13
MAR											
01...	5.8	1.4	3.4	26	.3	.3	15	8.2	3.1	.0	14
APR											
10...	5.3	1.3	4.0	31	.4	.3	19	2.4	3.3	.1	15
MAY											
09...	4.5	1.2	3.4	31	.4	.5	15	2.4	3.0	.1	14
JUN											
06...	5.8	1.2	3.1	25	.3	.5	19	2.4	2.4	.1	12
JUL											
12...	6.0	1.4	4.7	32	.5	.9	18	4.4	5.7	.1	14
AUG											
21...	--	--	--	--	--	.6	19	11	10	.0	--
SEP											
19...	9.7	1.6	10	41	.8	.7	25	5.3	19	.2	14

14244200 COWLITZ RIVER AT KELSO, WA--Continued

WATER QUALITY DATA

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)
OCT , 1978 16...	60	56	.08	907	--	.02	.01	.28	.29	.01	.28
NOV 01...	48	53	.07	752	--	.14	.01	.29	.30	.06	.24
DEC 04...	44	41	.06	1960	52	.33	.01	.21	.22	.00	.23
JAN , 1979 02...	44	45	.06	1160	--	.35	.00	.12	.12	.04	.08
FEB 01...	44	43	.06	832	--	.25	.01	.12	.13	.07	.06
MAR 01...	48	45	.07	1660	--	.40	.01	.14	.15	.08	.07
APR 10...	46	43	.06	820	4	.17	.01	.09	.10	.00	.15
MAY 09...	44	38	.06	879	9	.19	.03	.03	.06	.05	.01
JUN 06...	45	39	.06	984	0	.08	.01	.05	.06	.00	.07
JUL 12...	51	48	.07	633	0	.39	.00	.11	.11	.06	.05
AUG 21...	67	--	.09	597	11	.08	.04	.03	.07	.00	.16
SEP 19...	75	76	.10	749	48	.52	.03	.31	.34	.00	.35

DATE	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT , 1978 16...	.31	1.4	.020	.010	--	3.1	.3	12	181	75
NOV 01...	.44	1.9	.000	.000	1.2	--	--	86	1350	98
DEC 04...	.55	2.4	.050	.020	2.2	--	--	95	4230	29
JAN , 1979 02...	.47	2.1	.010	.000	--	1.3	.2	28	741	15
FEB 01...	.38	1.7	.020	.010	1.1	--	--	42	794	32
MAR 01...	.55	2.4	.040	.020	3.0	--	--	37	1280	32
APR 10...	.27	1.2	.010	.010	--	2.9	--	7	125	78
MAY 09...	.25	1.1	.020	.010	3.0	--	--	8	160	76
JUN 06...	.14	.62	.010	.010	1.7	--	--	6	131	48
JUL 12...	.50	2.2	.010	.010	--	.8	.1	10	124	--
AUG 21...	.15	.66	.010	.000	1.3	--	--	9	80	96
SEP 19...	.86	3.8	.020	.030	2.2	--	--	39	390	90

14244200 COWLITZ RIVER AT KELSO, WA--Continued

WATER QUALITY DATA

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, SUSPENDED RECOVERABLE (UG/L AS BA)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM SUSPENDED RECOVERABLE (UG/L AS CD)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)
OCT , 1978 16...	1250	0	0	0	0	0	0	0	0	0
JAN , 1979 02...	1330	0	0	0	0	<2	1	0	<1	0
APR 10...	1130	1	1	0	0	6	1	0	<1	10
JUL 12...	1630	0	1	0	0	<2	1	0	3	0

DATE	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)
OCT , 1978 16...	0	0	0	0	0	6	3	3	270	230
JAN , 1979 02...	0	0	2	0	<3	15	14	1	410	370
APR 10...	10	0	1	0	<3	7	3	4	350	250
JUL 12...	0	0	0	0	<3	10	6	4	150	100

DATE	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG)	MERCURY DISSOLVED (UG/L AS HG)
OCT , 1978 16...	40	19	15	4	10	0	10	.0	.0	.0
JAN , 1979 02...	40	1	0	1	20	20	5	.0	.0	.0
APR 10...	100	13	12	1	20	0	30	.1	.1	.0
JUL 12...	50	14	8	6	10	2	8	.0	.0	.0

DATE	SELENIUM, TOTAL (UG/L AS SE)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)
OCT , 1978 16...	0	0	0	2	2	0	10	10	0
JAN , 1979 02...	0	0	0	2	2	0	20	10	7
APR 10...	0	0	0	0	0	0	10	0	20
JUL 12...	0	0	0	0	0	0	20	0	20

DATE	TIME	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	CHLOR-A PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2)	CHLOR-B PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2)	LENGTH OF EXPOSURE (DAYS)
DEC , 1978 04...	1330	.000	.080	.010	.000	33
AUG , 1979 21...	1400	6.06	6.85	8.68	2.24	40

14244200 COWLITZ RIVER AT KELSO, WA--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	NOV 1,78	MAR 1,79	MAY 9,79	JUN 6,79	AUG 21,79	SEP 19,79
TIME	1210	1450	1130	0950	1400	1220
TOTAL CELLS/ML	430	300	370	52	430	800
DIVERSITY: DIVISION	0.2	0.7	0.4	1.5	1.0	0.2
.CLASS	0.2	0.7	0.4	1.5	1.0	0.2
..ORDER	0.2	1.4	1.3	1.5	1.2	0.5
...FAMILY	2.6	1.9	2.2	1.5	1.9	2.8
....GENUS	2.9	2.2	2.2	1.5	1.9	3.1

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...CHARACIACEAE												
....SCHROEDERIA	--	-	--	-	14	4	--	-	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	13#	25	--	-	--	-
....KIRCHNERIELLA	14	3	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	14	4	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	--	-	--	-	100#	24	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-	27	3
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	25	8	--	-	26#	50	13	3	41	5
....MELOSIRA	--	-	150#	50	170#	46	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	69#	16	--	-	14	4	--	-	--	-	96	12
....COCCONEIS	28	6	--	-	--	-	--	-	13	3	--	-
...CYMBELLACEAE												
....AMPHORA	14	3	--	-	--	-	--	-	--	-	--	-
....CYMBELLA	97#	23	5	2	29	8	--	-	--	-	140#	17
...DIATOMACEAE												
....DIATOMA	55	13	--	-	--	-	--	-	--	-	69	9
...FRAGILARIACEAE												
....ASTERIONELLA	--	-	15	5	100#	27	--	-	--	-	14	2
....FRAGILARIA	--	-	--	-	--	-	--	-	190#	45	27	3
....HANNAEA	--	-	--	-	--	-	--	-	--	-	14	2
....SYNEDRA	28	6	--	-	--	-	--	-	--	-	150#	19
...GOMPHONEMATACEAE												
....GOMPHONEIS	55	13	--	-	--	-	--	-	--	-	--	-
....GOMPHONEMA	--	-	5	2	14	4	--	-	--	-	14	2
...NAVICULACEAE												
....NAVICULA	--	-	30	10	--	-	--	-	--	-	41	5
...NITZSCHIACEAE												
....NITZSCHIA	69#	16	5	2	14	4	--	-	90#	21	160#	21
...TABELLARIACEAE												
....TABELLARIA	--	-	5	2	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	--	-	13#	25	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	61#	20	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	13	3	--	-

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

14245000 COWEMAN RIVER NEAR KELSO, WA

LOCATION.--Lat 46°07'42", long 122°50'14", in SE¼SW¼ sec.32, T.8 N., R.1 W., Cowlitz County, Hydrologic Unit 17080005, on right bank 3.4 mi (5.5 km) southeast of Kelso High School, 3.9 mi (6.3 km) downstream from Goble Creek, and at mile 7.5 (12.1 km).

DRAINAGE AREA.--119 mi² (308 km²).

PERIOD OF RECORD.--July 1950 to current year. Chemical analyses, October 1961 to September 1972, October 1974 to September 1975, collected at site 4.7 mi (7.6 km) downstream, were published as 14245000 prior to October 1974 and 14245100 "at Kelso" thereafter. Water temperatures July 1950 to September 1972.

GAGE.--Water-stage recorder. Altitude of gage is 30 ft (9 m), from topographic map.

REMARKS.--Records good. No regulation or diversion above station

AVERAGE DISCHARGE.--29 years, 426 ft³/s (12.06 m³/s) 48.61 in/yr (1,235 mm/yr), 308,600 acre-ft/yr (381 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,940 ft³/s (282 m³/s) Dec. 2, 1977, gage height, 14.67 ft (4.471 m) from rating curve extended above 4,900 ft³/s (139 m³/s) on basis of slope-area measurement at gage height 12.8 ft (3.90 m); minimum, 22 ft³/s (0.62 m³/s) Sept. 22, 1951; minimum gage height, 2.54 ft (0.774 m) Aug. 14, 15, 1975.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 24, 1950, reached a stage of 12.8 ft (3.90 m) from floodmarks, discharge, 7,730 ft³/s (219 m³/s) by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,600 ft³/s (73.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 7	0100	*5,830	165	*10.83	3.301

Minimum discharge, 34 ft³/s (0.96 m³/s) Aug. 12, 13, gage height, 2.80 ft (0.853 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	93	1320	200	140	720	243	220	120	160	39	60
2	96	88	840	190	130	605	282	225	114	123	39	253
3	92	236	605	180	130	625	323	207	111	98	40	370
4	89	466	760	170	306	868	299	261	108	85	39	269
5	87	278	710	160	940	1790	295	655	111	81	39	162
6	83	198	546	155	2200	1290	285	750	113	75	38	130
7	79	161	418	150	3780	1030	264	655	115	73	37	104
8	80	193	348	145	1640	800	255	534	103	69	37	129
9	79	171	351	140	1360	665	316	434	98	65	36	164
10	82	151	344	344	1390	560	369	371	94	74	36	117
11	81	138	720	249	1520	466	534	326	91	68	35	96
12	77	129	685	231	1580	418	590	290	88	72	35	85
13	75	120	534	231	1330	376	892	266	88	65	35	76
14	73	115	514	228	994	344	795	250	87	59	50	66
15	70	116	454	220	805	369	660	233	87	56	60	62
16	70	160	410	202	715	341	575	216	98	54	60	63
17	70	334	426	195	700	306	550	202	110	51	51	59
18	69	315	394	185	922	285	534	191	113	49	51	57
19	66	502	351	187	874	267	498	180	102	48	71	54
20	71	362	306	225	780	252	426	172	97	47	110	55
21	78	281	334	373	675	243	379	165	89	47	69	54
22	69	236	458	369	585	225	351	161	84	49	72	52
23	66	202	555	316	555	212	334	160	80	48	54	51
24	72	184	850	295	580	205	358	154	78	48	59	51
25	69	176	790	261	710	200	302	145	74	48	49	50
26	65	169	625	231	845	195	282	143	70	47	45	48
27	63	167	506	222	910	212	267	151	67	45	44	47
28	66	275	402	207	850	220	261	158	66	44	42	53
29	189	327	323	180	---	195	246	156	67	46	41	51
30	155	958	260	160	---	195	234	134	103	44	42	48
31	108	---	220	150	---	195	---	126	---	41	52	---
TOTAL	2595	7301	16359	6751	27946	14674	11999	8291	2826	1979	1507	2936
MEAN	83.7	243	528	218	998	473	400	267	94.2	63.8	48.6	97.9
MAX	189	958	1320	373	3780	1790	892	750	120	160	110	370
MIN	63	88	220	140	130	195	234	126	66	41	35	47
CFSM	.70	2.04	4.44	1.83	8.39	3.98	3.36	2.24	.79	.54	.41	.82
IN.	.81	2.28	5.11	2.11	8.74	4.59	3.75	2.59	.88	.62	.47	.92
AC-FT	5150	14480	32450	13390	55430	29110	23800	16450	5610	3930	2990	5820

CAL YR 1978 TOTAL 108143 MEAN 296 MAX 1320 MIN 49 CFSM 2.49 IN 33.81 AC-FT 214500
WTR YR 1979 TOTAL 105164 MEAN 288 MAX 3780 MIN 35 CFSM 2.42 IN 32.87 AC-FT 208600

14247400 COLUMBIA RIVER AT BRADWOOD, OR

LOCATION.--Lat 46°11'45", long 123°25'50", in SW¼NE¼ sec.9, T.8 N., R.6 W., Clatsop County, Hydrologic Unit 17080003, at Bradwood, and at mile 38.9 (62.6 km).

DRAINAGE AREA.--257,100 mi^2 (665,900 km^2).

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1976 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 22.5°C Aug. 12, 16, 17, 1977; minimum, 0.0°C several days in January and February 1979.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 21.5°C July 31, Aug. 1, 26; minimum, 0.0°C several days in January and February.

WATER QUALITY DATA

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN DEMAND, CHEM- ICAL (LOW LEVEL) (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
OCT , 1978 17...	1300	156	7.8	15.7	9.2	50	--	620	K2	9.7	93
NOV 09...	1030	150	7.7	11.0	10.8	--	--	<1	K4500	8.9	90
DEC 12...	1200	126	7.7	5.5	12.5	--	--	620	41	12	77
JAN , 1979 17...	1130	151	7.2	1.2	9.8	--	30	K14	95	9.9	74
FEB 14...	1200	117	7.3	4.0	12.9	--	33	230	550	11	69
MAR 09...	1200	122	8.4	6.0	12.5	--	15	90	57	11	81
APR 06...	1300	188	8.1	8.1	12.3	--	11	K21	K5	12	110
MAY 16...	1100	158	8.2	13.9	11.3	--	--	33	K4	10	93
JUN 15...	1200	113	8.5	16.6	10.2	--	--	53	K2	5.6	69
JUL 12...	1100	127	7.9	19.3	9.3	--	--	K24	K19	6.9	70
AUG 23...	1130	144	7.6	20.5	8.7	--	--	--	K3	6.9	80
SEP 18...	1100	159	7.2	19.7	--	--	--	94	K2	8.0	125

DATE	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)
OCT , 1978 17...	.13	13	.15	.11	.35	.61	2.7	.030	1	5
NOV 09...	.12	8	.15	.01	.28	.44	1.9	.030	1	5
DEC 12...	.10	32	.38	.02	.17	.57	2.5	.020	1	37
JAN , 1979 17...	.10	9	.34	.02	.16	.52	2.3	.060	1	0
FEB 14...	.09	113	.57	.09	.40	1.1	4.7	.190	2	15
MAR 09...	.11	33	.52	.07	.20	.79	3.5	.060	1	1
APR 06...	.15	16	.66	.08	.18	.92	4.1	.070	2	4
MAY 16...	.13	49	.20	.05	.30	.55	2.4	.070	1	2
JUN 15...	.09	13	.01	.02	.50	.53	2.3	.050	5	1
JUL 12...	.10	22	.02	.05	.16	.23	1.0	.020	3	4
AUG 23...	.11	14	.07	.01	.16	.24	1.1	.040	2	2
SEP 18...	.17	17	.00	.10	.12	.22	.97	.220	1	1

14247400 COLUMBIA RIVER AT BRADWOOD, OR--Continued

WATER QUALITY DATA

DATE	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLORO-PHYLL A PHYTO-PLANK-TON, UNCORR. (UG/L)	CHLORO-PHYLL B PHYTO-PLANK-TON, UNCORR. (UG/L)
OCT , 1978 17...	10	40	340	130	.0	0	50	2.6	8.10	.000
NOV 09...	0	11	270	38	.2	0	20	2.4	.000	.000
DEC 12...	20	43	1500	17	.0	0	50	2.4	.000	.000
JAN , 1979 17...	0	18	470	6	.1	0	20	2.1	--	--
FEB 14...	0	45	5000	26	.0	0	90	5.2	6.42	.000
MAR 09...	0	34	1800	38	.0	0	50	2.8	1.83	.220
APR 06...	10	49	1700	53	.1	0	70	5.6	3.46	.150
MAY 16...	0	15	1300	8	.0	0	40	3.9	18.2	8.47
JUN 15...	10	18	570	10	.8	0	20	4.2	4.05	.000
JUL 12...	10	27	470	130	.1	0	40	5.3	5.74	.000
AUG 23...	20	8	380	9	.1	0	0	3.3	1.09	.000
SEP 18...	10	12	180	4	.7	0	0	2.1	--	--

DATE	TIME	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM TOTAL RECOV-ERABLE (MG/L AS CA)	MAGNE-SIUM, TOTAL RECOV-ERABLE (MG/L AS MG)	SODIUM, TOTAL RECOV-ERABLE (MG/L AS NA)	POTAS-SIUM, TOTAL RECOV-ERABLE (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)
OCT , 1978 17...	1300	--	--	14	4.0	7.3	1.5	68
JAN , 1979 17...	1130	--	--	15	4.7	6.4	1.0	58
APR 06...	1300	0	0	18	5.7	8.5	1.1	81
JUL 12...	1100	0	0	15	3.4	5.8	1.1	49

DATE	CAR-BONATE (MG/L AS CO3)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	OIL AND GREASE (MG/L)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L)
OCT , 1978 17...	0	56	1.7	9.7	5.2	0	--
JAN , 1979 17...	0	48	5.9	11	4.3	--	0
APR 06...	0	66	1.0	16	5.4	--	0
JUL 12...	0	40	1.0	14	4.7	--	0

14247400 COLUMBIA RIVER AT BRADWOOD, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	17.5	17.5	17.5	12.5	12.5	12.5	6.0	6.0	6.0	2.5	2.0	2.0
2	17.0	17.0	17.0	12.5	12.0	12.0	6.0	6.0	6.0	2.0	1.5	1.5
3	17.0	17.0	17.0	12.0	12.0	12.0	6.5	6.0	6.5	1.5	.5	1.0
4	17.0	17.0	17.0	12.0	11.5	12.0	6.5	6.5	6.5	.5	.0	.5
5	17.0	17.0	17.0	11.5	11.5	11.5	6.5	6.5	6.5	.5	.0	.5
6	17.0	17.0	17.0	11.5	11.5	11.5	6.5	6.5	6.5	.5	.5	.5
7	17.0	16.5	16.5	11.5	11.5	11.5	6.5	6.0	6.0	.5	.5	.5
8	16.5	16.5	16.5	11.5	11.5	11.5	6.0	6.0	6.0	.5	.5	.5
9	16.5	16.5	16.5	11.5	11.0	11.0	6.0	5.5	5.5	.5	.0	.5
10	16.5	16.5	16.5	11.0	10.5	10.5	5.5	5.5	5.5	.0	.0	.0
11	16.5	16.5	16.5	10.5	10.0	10.0	5.5	5.5	5.5	.0	.0	.0
12	16.5	16.5	16.5	10.0	9.5	9.5	5.5	5.5	5.5	.0	.0	.0
13	16.5	16.0	16.0	9.5	8.5	9.0	5.5	5.5	5.5	.0	.0	.0
14	16.0	16.0	16.0	8.5	8.0	8.0	5.5	5.5	5.5	.5	.0	.5
15	16.0	16.0	16.0	8.0	8.0	8.0	5.5	5.5	5.5	1.0	.5	.5
16	16.0	16.0	16.0	8.0	8.0	8.0	5.5	5.5	5.5	1.0	1.0	1.0
17	16.0	15.5	16.0	8.0	7.5	8.0	5.5	5.5	5.5	1.0	1.0	1.0
18	15.5	15.5	15.5	7.5	7.5	7.5	5.5	5.0	5.5	1.0	1.0	1.0
19	15.5	15.5	15.5	7.5	7.0	7.5	5.0	5.0	5.0	1.0	1.0	1.0
20	15.5	15.5	15.5	7.5	7.0	7.0	5.0	4.5	5.0	1.0	1.0	1.0
21	15.5	15.5	15.5	7.5	7.0	7.0	4.5	4.5	4.5	1.0	1.0	1.0
22	15.5	15.0	15.0	7.0	5.5	6.0	4.5	4.5	4.5	1.0	1.0	1.0
23	15.0	14.5	14.5	6.0	5.5	5.5	4.5	4.5	4.5	1.0	1.0	1.0
24	14.5	14.5	14.5	5.5	5.5	5.5	5.0	4.5	5.0	1.0	1.0	1.0
25	14.5	14.0	14.5	5.5	5.5	5.5	5.0	5.0	5.0	1.0	1.0	1.0
26	14.0	14.0	14.0	6.0	5.5	5.5	5.0	4.5	5.0	1.0	1.0	1.0
27	14.0	14.0	14.0	6.0	5.5	6.0	4.5	4.5	4.5	1.0	.5	.5
28	14.0	13.5	14.0	6.0	6.0	6.0	4.5	4.0	4.5	.5	.5	.5
29	13.5	13.0	13.5	6.0	6.0	6.0	4.0	3.5	4.0	1.0	.5	.5
30	13.0	13.0	13.0	6.0	6.0	6.0	3.5	3.0	3.5	1.0	.5	1.0
31	13.0	12.5	12.5	---	---	---	3.5	2.5	3.0	1.0	.0	.5
MONTH	17.5	12.5	15.5	12.5	5.5	8.5	6.5	2.5	5.5	2.5	.0	.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	.0	.0	.0	4.0	4.0	4.0	7.5	7.5	7.5	11.5	11.5	11.5
2	.0	.0	.0	4.5	4.0	4.0	7.5	7.5	7.5	11.5	11.5	11.5
3	.0	.0	.0	4.5	4.0	4.5	7.5	7.5	7.5	11.5	11.5	11.5
4	.0	.0	.0	4.5	4.5	4.5	8.0	7.5	7.5	11.5	11.5	11.5
5	.5	.0	.5	4.5	4.5	4.5	8.0	8.0	8.0	12.0	11.5	12.0
6	1.0	.5	.5	5.0	4.5	5.0	8.5	8.0	8.5	12.0	12.0	12.0
7	1.5	1.0	1.0	5.5	5.0	5.5	8.5	8.5	8.5	12.5	12.0	12.0
8	1.5	1.5	1.5	6.0	5.5	6.0	8.5	8.5	8.5	12.5	12.5	12.5
9	2.5	1.5	2.0	6.0	6.0	6.0	8.5	8.5	8.5	12.5	12.5	12.5
10	3.5	2.5	3.0	6.0	6.0	6.0	8.5	8.5	8.5	12.5	12.0	12.0
11	4.0	3.5	3.5	6.0	6.0	6.0	8.5	8.5	8.5	12.5	12.0	12.0
12	4.5	4.0	4.0	6.5	6.0	6.0	8.5	8.5	8.5	13.0	12.5	12.5
13	4.5	4.0	4.5	6.0	6.0	6.0	8.5	8.5	8.5	13.0	13.0	13.0
14	4.5	4.0	4.0	6.0	6.0	6.0	8.5	8.5	8.5	13.5	13.0	13.5
15	4.0	3.5	4.0	6.0	6.0	6.0	9.0	8.5	8.5	14.0	13.5	13.5
16	3.5	3.5	3.5	6.5	6.0	6.0	9.0	8.5	8.5	14.0	14.0	14.0
17	3.5	3.5	3.5	6.0	6.0	6.0	8.5	8.5	8.5	14.5	14.0	14.0
18	3.5	3.0	3.5	6.0	6.0	6.0	9.0	8.5	9.0	14.5	14.5	14.5
19	3.5	3.5	3.5	6.5	6.0	6.5	9.0	9.0	9.0	14.5	14.5	14.5
20	3.5	3.5	3.5	7.0	6.5	6.5	9.5	9.0	9.0	14.5	14.5	14.5
21	3.5	3.5	3.5	7.0	7.0	7.0	9.5	9.5	9.5	15.0	14.5	14.5
22	3.5	3.5	3.5	7.5	7.0	7.0	10.0	9.5	9.5	15.0	15.0	15.0
23	3.5	3.5	3.5	7.5	7.5	7.5	10.0	10.0	10.0	15.0	15.0	15.0
24	3.5	3.5	3.5	7.5	7.5	7.5	10.5	10.0	10.0	15.0	15.0	15.0
25	3.5	3.5	3.5	7.5	7.5	7.5	10.5	10.0	10.5	15.5	15.0	15.0
26	3.5	3.5	3.5	7.5	7.5	7.5	10.5	10.0	10.5	15.5	15.5	15.5
27	4.0	3.5	4.0	7.5	7.5	7.5	10.5	10.5	10.5	15.5	15.5	15.5
28	4.0	4.0	4.0	7.5	7.5	7.5	11.0	10.5	11.0	15.5	15.0	15.5
29	---	---	---	7.5	7.5	7.5	11.0	11.0	11.0	15.0	15.0	15.0
30	---	---	---	7.5	7.5	7.5	11.5	11.0	11.0	15.0	15.0	15.0
31	---	---	---	7.5	7.5	7.5	---	---	---	15.0	15.0	15.0
MONTH	4.5	.0	2.5	7.5	4.0	6.0	11.5	7.5	9.0	15.5	11.5	13.5

14247400 COLUMBIA RIVER AT BRADWOOD, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	15.5	15.0	15.0	18.0	18.0	18.0	21.5	21.0	21.0	21.0	20.5	20.5
2	16.0	15.5	16.0	18.0	18.0	18.0	21.0	20.5	21.0	20.5	20.0	20.5
3	16.5	16.0	16.0	18.0	17.5	17.5	21.0	21.0	21.0	20.5	20.0	20.0
4	16.5	16.5	16.5	17.5	17.5	17.5	21.0	20.5	21.0	20.5	20.0	20.0
5	16.5	16.5	16.5	17.5	17.5	17.5	21.0	20.5	21.0	20.0	20.0	20.0
6	16.5	16.5	16.5	18.5	17.5	18.0	21.0	20.5	20.5	20.0	19.5	20.0
7	16.5	16.0	16.0	18.5	18.5	18.5	20.5	20.5	20.5	20.0	19.5	20.0
8	16.0	16.0	16.0	18.5	18.5	18.5	21.0	20.0	20.5	20.5	20.0	20.0
9	16.0	16.0	16.0	19.0	18.5	19.0	21.0	20.5	20.5	20.5	20.0	20.5
10	16.0	16.0	16.0	19.0	19.0	19.0	20.5	20.5	20.5	20.5	20.0	20.5
11	16.5	16.0	16.0	19.0	19.0	19.0	21.0	20.5	20.5	20.5	20.0	20.5
12	16.5	16.0	16.0	19.5	19.0	19.0	21.0	20.5	20.5	20.5	20.0	20.0
13	16.5	16.5	16.5	19.5	19.0	19.5	20.5	20.5	20.5	20.5	20.0	20.0
14	16.5	16.5	16.5	20.0	19.0	19.5	20.5	20.5	20.5	20.5	20.0	20.5
15	16.5	16.5	16.5	20.5	19.5	19.5	21.0	20.5	20.5	20.5	20.5	20.5
16	16.5	16.5	16.5	20.5	19.5	20.0	21.0	20.5	21.0	20.5	20.0	20.0
17	16.5	16.5	16.5	20.5	20.0	20.0	21.0	20.5	21.0	20.0	20.0	20.0
18	16.5	16.5	16.5	21.0	20.5	20.5	21.0	20.5	20.5	20.0	19.5	20.0
19	16.5	16.5	16.5	21.0	20.5	21.0	20.5	20.5	20.5	20.0	19.5	20.0
20	16.5	16.5	16.5	21.0	20.5	21.0	21.0	20.5	20.5	20.0	20.0	20.0
21	16.5	16.0	16.0	21.0	20.5	21.0	20.5	20.5	20.5	20.5	20.0	20.0
22	16.0	16.0	16.0	21.0	20.5	20.5	21.0	20.5	20.5	20.5	20.0	20.0
23	16.5	16.0	16.5	21.0	20.5	20.5	20.5	20.5	20.5	20.0	20.0	20.0
24	16.5	16.5	16.5	21.0	20.5	20.5	21.0	20.5	20.5	20.0	19.5	20.0
25	17.0	16.5	17.0	20.5	20.5	20.5	21.0	20.5	21.0	20.0	19.5	20.0
26	17.5	17.0	17.0	20.5	20.0	20.5	21.5	21.0	21.0	20.0	19.5	19.5
27	18.0	17.5	17.5	20.5	20.0	20.0	21.0	21.0	21.0	19.5	19.5	19.5
28	18.0	18.0	18.0	20.5	20.0	20.0	21.0	20.5	21.0	19.5	19.5	19.5
29	18.0	18.0	18.0	20.5	20.0	20.5	21.0	21.0	21.0	19.5	19.0	19.0
30	18.0	18.0	18.0	21.0	20.5	20.5	21.0	21.0	21.0	19.0	19.0	19.0
31	---	---	---	21.5	21.0	21.0	21.0	20.5	20.5	---	---	---
MONTH	18.0	15.0	16.5	21.5	17.5	19.5	21.5	20.0	20.5	21.0	19.0	20.0
YEAR	21.5	.0	11.5									

14270000 COLUMBIA RIVER NEAR ILWACO, WA

LOCATION.--Lat 46°16'00", long 124°02'12", T.9 N., R.11 W., Pacific County, Hydrologic Unit 17080006, on right bank at U.S. Corps of Engineers signal tower 100 ft (30 m) upstream from "A" jetty, 3.0 mi (4.8 km) south of Ilwaco, and at mile 2.4 (3.9 km).

DRAINAGE AREA.--258,000 mi² (668,000 km²).

PERIOD OF RECORD.--June to October 1977, June 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is at -10.0 ft (-3.048 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No record Sept. 28-30. Station in tidal effect at all stages.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 16.57 ft (5.051 m) Feb. 25, 1979; minimum gage height, 3.37 ft (1.027 m) June 30, 1977 and December 31, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 16.57 ft (5.051 m) Feb. 25; minimum gage height, 3.37 ft (1.027 m) Dec. 31.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW
1	13.64	6.71	15.19	4.95	16.09	4.56	14.66	3.92	14.55	6.45	15.72	6.85
2	13.89	6.26	15.35	4.79	15.58	4.39	14.35	5.04	14.56	7.16	15.49	6.88
3	14.20	5.97	15.38	5.94	15.46	4.77	14.31	6.20	14.16	7.63	15.26	7.49
4	14.37	5.58	14.78	4.88	14.38	5.04	14.53	7.11	13.86	7.31	15.19	8.05
5	14.67	6.15	13.95	5.44	13.34	5.57	14.25	8.19	14.07	7.43	14.45	8.02
6	14.85	6.22	13.80	6.01	13.40	8.53	14.50	8.04	14.42	7.46	13.85	7.79
7	14.42	6.66	13.61	9.47	13.48	6.05	14.49	7.48	14.00	6.63	13.52	7.22
8	14.30	9.80	13.41	6.65	13.64	6.77	14.52	6.79	14.54	6.88	13.24	6.86
9	13.86	6.92	13.45	6.83	14.30	6.75	14.72	6.43	14.76	6.38	13.36	7.10
10	13.56	6.83	13.47	6.77	14.84	7.19	15.45	6.57	15.13	6.48	14.06	6.72
11	13.18	6.55	14.19	6.20	14.98	5.67	15.87	6.22	15.00	6.52	13.86	6.59
12	13.38	6.24	14.70	5.40	14.46	5.03	15.04	5.64	15.50	7.78	13.91	6.65
13	13.84	6.02	14.51	4.92	14.68	5.02	14.95	5.80	15.96	7.23	14.29	6.93
14	14.52	6.60	14.81	4.91	14.99	5.31	15.27	6.49	14.64	7.01	14.20	7.13
15	14.84	5.86	15.45	6.24	15.01	5.39	14.87	6.14	14.67	7.79	14.34	7.62
16	15.11	5.39	15.44	5.78	15.35	6.67	14.13	6.54	14.73	8.41	14.41	7.42
17	14.91	5.29	14.68	5.78	15.21	6.51	14.40	7.19	15.04	9.45	14.27	7.16
18	14.76	5.52	14.53	6.86	14.22	6.56	14.13	7.43	15.10	9.06	14.50	7.17
19	14.79	6.11	14.02	7.05	13.39	6.70	13.98	8.14	14.60	8.51	14.26	7.08
20	14.11	6.35	13.34	7.30	13.08	7.57	13.95	8.67	14.53	8.40	14.18	7.13
21	13.35	6.79	13.16	10.24	13.27	8.17	13.96	8.44	14.75	7.86	14.23	7.24
22	12.88	9.85	13.12	7.74	13.77	9.68	13.66	7.68	15.44	7.33	13.64	6.75
23	12.72	7.33	13.17	7.95	14.07	8.75	14.13	7.21	15.71	6.32	13.56	6.22
24	12.22	7.67	13.16	8.03	13.73	7.72	14.89	6.53	16.16	6.57	13.71	5.89
25	12.32	7.61	13.46	7.87	14.02	6.89	15.30	5.21	16.57	5.93	14.31	5.76
26	13.02	7.68	13.66	6.94	14.42	5.95	15.40	4.40	16.13	5.36	15.16	5.94
27	13.42	7.83	14.19	6.38	15.10	5.14	15.56	4.00	16.15	5.66	15.39	6.25
28	13.83	7.79	15.09	5.44	15.44	4.42	15.33	3.61	15.85	6.25	15.63	6.26
29	14.05	6.67	15.51	4.97	15.42	3.71	15.49	3.92	---	---	15.53	5.75
30	14.13	5.76	16.09	4.81	15.68	3.51	14.89	4.64	---	---	15.23	5.67
31	14.84	5.25	---	---	15.20	3.37	14.64	5.34	---	---	14.63	5.41
MEAN	13.93	6.69	14.29	6.42	14.52	6.04	14.70	6.29	15.02	7.19	14.43	6.81

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW	HIGH-HIGH	LOW-LOW
1	14.27	5.90	13.85	6.20	12.24	6.64	12.88	7.44	12.87	7.85	14.57	7.45
2	13.92	6.41	13.13	6.46	12.47	7.32	13.06	8.00	13.17	7.39	14.86	7.04
3	13.23	6.81	12.71	7.18	12.72	7.78	13.38	8.33	13.64	6.83	14.96	6.52
4	12.75	7.16	13.38	7.91	13.00	7.93	13.65	8.02	13.91	6.23	15.69	5.73
5	12.82	7.54	13.86	8.81	13.22	8.13	14.03	7.31	14.28	5.26	14.22	5.44
6	12.84	7.60	14.04	8.99	13.38	7.36	14.61	6.62	12.31	4.48	15.58	4.95
7	12.99	7.39	13.94	8.67	13.59	6.26	15.21	5.89	14.80	4.01	15.44	5.50
8	13.52	7.61	13.93	8.33	13.81	5.28	12.99	5.33	14.87	3.79	15.79	6.17
9	14.07	7.45	13.93	7.15	12.05	4.54	15.59	4.76	14.82	3.75	14.98	5.99
10	14.50	7.87	12.83	6.33	14.19	4.06	16.02	4.61	14.56	4.15	14.46	6.07
11	13.63	7.33	14.29	5.47	14.62	3.98	15.68	4.49	14.10	4.76	13.82	6.37
12	14.68	6.95	14.35	4.96	14.88	3.98	15.22	4.42	14.48	6.15	13.54	8.59
13	15.97	6.80	14.58	4.56	14.63	4.15	14.60	4.73	14.07	7.24	13.58	6.93
14	14.81	6.12	14.62	4.75	14.17	4.65	13.76	5.45	13.79	6.95	13.89	7.48
15	14.82	5.85	14.69	4.94	13.79	5.23	13.81	6.35	13.81	7.03	13.62	7.47
16	14.69	6.17	14.35	5.12	13.70	6.37	13.98	7.46	13.78	6.98	13.26	7.16
17	14.43	6.25	13.65	5.33	13.70	6.99	14.02	7.34	13.81	6.83	13.54	6.67
18	13.89	6.19	12.95	5.57	13.82	7.41	13.97	6.98	14.14	6.60	13.21	6.99
19	13.47	6.39	13.32	6.14	14.00	7.03	14.07	6.56	14.25	6.49	14.00	6.89
20	13.15	6.41	13.47	6.77	14.13	6.37	13.97	6.13	14.19	6.07	14.19	6.93
21	13.43	6.67	14.32	7.25	14.03	5.35	12.12	5.68	13.15	6.15	13.79	7.02
22	14.10	6.75	14.81	6.97	12.23	4.87	14.08	5.17	14.19	6.15	13.59	7.00
23	14.50	6.76	13.25	6.13	14.17	4.67	13.98	5.03	14.12	6.27	13.52	6.74
24	14.80	6.63	15.13	5.23	14.17	4.65	14.08	5.08	13.93	6.59	13.77	6.92
25	15.08	5.59	14.88	4.97	14.18	4.52	14.09	5.30	13.63	6.84	14.09	6.88
26	13.98	5.34	15.05	5.15	13.89	4.71	13.99	5.82	13.41	7.27	13.81	7.02
27	15.19	4.99	14.64	4.84	13.53	5.15	13.56	6.20	13.39	7.76	14.10	9.44
28	14.98	4.94	14.38	4.99	13.20	5.51	13.10	6.53	13.46	7.93	---	---
29	14.70	5.17	13.67	5.05	13.02	6.29	12.86	7.07	13.57	8.81	---	---
30	14.30	5.71	13.02	5.27	12.51	6.82	12.83	7.45	13.60	7.96	---	---
31	---	---	12.71	5.87	---	---	12.88	7.88	13.75	7.49	---	---
MEAN	14.12	6.49	13.93	6.17	13.57	5.80	13.94	6.24	13.87	6.39	14.22	6.79
YEAR	14.21	6.43										

14270000 COLUMBIA RIVER NEAR ILWACO, WA--Continued

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	13.51	6.86	13.71	7.82	14.19	9.24	13.54	7.93	13.63	7.35	14.98	7.03
2	13.32	6.79	13.64	8.31	14.03	9.05	13.82	8.17	12.85	7.43	14.03	7.89
3	13.54	6.97	13.70	8.68	13.80	9.32	13.80	8.51	12.10	8.30	13.39	8.97
4	13.43	7.51	13.76	8.95	14.12	9.20	12.97	8.38	11.64	---	13.35	9.78
5	13.30	8.15	13.24	9.84	13.23	8.63	12.52	---	11.97	9.23	12.45	10.16
6	13.66	8.97	12.96	9.31	12.46	---	12.28	8.30	12.61	9.69	12.14	---
7	13.21	9.30	13.17	---	11.99	8.07	12.18	8.89	12.66	10.10	12.14	10.07
8	12.98	---	12.74	8.87	12.07	7.48	12.41	9.41	13.46	10.10	12.28	9.68
9	13.10	10.04	12.40	7.97	12.20	7.96	13.06	9.74	13.33	10.19	13.29	9.34
10	12.88	9.41	12.34	6.82	13.13	8.37	---	10.55	---	9.78	13.23	9.41
11	12.98	8.57	13.20	6.80	---	9.07	13.74	10.39	13.57	9.47	13.20	8.87
12	13.27	7.67	---	7.69	12.80	8.76	13.66	9.89	14.00	9.70	13.59	8.28
13	13.80	7.05	13.11	7.70	12.79	9.00	13.18	9.46	15.60	10.95	---	8.09
14	---	6.62	13.17	7.96	13.27	9.62	13.91	10.05	14.59	9.07	14.12	7.73
15	14.08	6.81	13.41	8.73	13.69	9.52	14.12	9.82	14.24	9.01	14.84	7.64
16	14.19	7.28	14.13	9.66	13.99	10.07	13.68	9.39	14.16	9.38	13.92	7.94
17	14.01	7.55	13.64	9.44	14.56	10.74	14.20	9.53	14.33	9.84	13.47	8.41
18	13.72	8.08	13.50	9.77	14.21	10.47	13.46	9.28	13.31	9.53	13.13	8.80
19	13.49	8.85	13.99	10.54	13.39	9.88	13.24	9.28	12.40	9.75	12.37	9.12
20	13.43	9.34	13.22	10.40	13.07	9.76	12.27	9.02	12.80	10.44	12.46	9.69
21	12.53	9.47	13.01	---	12.47	9.81	11.52	---	13.05	---	12.41	---
22	12.32	---	12.36	10.12	12.43	---	11.32	8.91	13.43	10.61	12.27	9.99
23	12.20	10.18	11.91	9.52	11.89	9.03	12.30	9.06	14.04	10.49	13.16	9.40
24	12.07	9.86	11.89	8.77	11.43	8.76	12.69	9.79	15.18	9.92	13.36	8.93
25	12.05	9.45	11.93	8.24	12.01	8.67	12.83	9.67	15.45	9.76	14.27	8.23
26	12.85	8.93	12.22	8.12	12.53	8.92	13.11	9.08	15.46	8.58	14.90	7.64
27	13.19	8.29	12.90	8.09	12.83	9.18	---	8.73	---	7.65	---	7.11
28	13.13	7.93	13.66	8.39	---	9.01	13.58	7.82	15.78	7.25	14.99	6.60
29	---	7.92	---	8.84	13.16	8.57	13.76	7.49	---	---	14.45	7.03
30	13.12	7.62	13.73	8.97	13.39	8.51	14.33	7.44	---	---	13.82	7.58
31	13.31	7.72	---	---	13.83	7.99	14.40	7.42	---	---	13.14	8.17
MEAN	13.20	8.25	13.09	8.70	13.07	9.06	13.17	9.01	13.68	9.37	13.39	8.54

DAY	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW	LOW-HIGH	HIGH-LOW
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	12.63	8.87	12.34	9.45	12.11	---	12.58	---	11.00	8.14	12.38	10.14
2	12.19	9.29	12.18	9.72	11.98	9.34	11.71	8.94	10.91	8.65	12.97	10.25
3	11.98	9.66	12.56	---	11.52	9.18	11.39	8.60	11.14	8.86	13.27	9.31
4	12.00	---	12.69	10.19	11.39	8.74	11.48	8.71	11.59	8.92	13.86	8.71
5	12.70	9.87	13.38	10.67	11.51	8.20	11.67	9.05	11.92	8.59	---	7.89
6	12.64	9.92	13.01	10.28	11.55	8.17	12.16	9.19	---	8.29	14.84	7.10
7	12.83	9.36	13.13	9.48	11.58	8.06	12.73	9.40	12.87	7.85	15.42	7.07
8	13.42	9.04	13.31	8.46	11.76	8.10	---	9.16	13.30	7.40	15.65	6.44
9	13.65	8.65	12.82	8.03	---	8.16	13.79	9.21	13.64	7.05	14.70	6.55
10	13.57	7.92	---	7.85	12.46	8.32	13.83	8.80	13.84	6.87	13.58	7.03
11	---	7.54	13.15	8.15	12.89	8.37	13.99	8.41	14.03	6.89	12.62	7.75
12	14.43	8.80	12.76	8.11	13.00	8.66	14.00	8.13	13.47	7.05	12.08	---
13	13.97	8.30	12.92	8.55	12.99	8.49	13.93	7.93	12.93	---	12.03	9.47
14	13.66	8.55	13.02	8.90	13.28	8.52	13.69	7.55	12.13	7.97	12.57	10.02
15	13.25	8.83	12.97	9.21	13.41	8.69	12.81	---	11.76	8.79	12.88	9.82
16	13.11	9.40	12.66	9.10	13.43	---	12.36	7.54	11.90	9.35	12.49	9.21
17	12.74	9.60	12.50	9.02	12.77	8.36	11.98	8.11	12.03	9.48	12.58	8.98
18	12.48	9.65	12.56	---	12.08	7.83	11.75	8.68	12.52	9.61	---	8.65
19	12.60	---	12.73	8.61	11.86	7.92	11.95	9.06	12.88	9.33	13.51	8.20
20	12.91	9.48	12.60	8.36	11.94	8.18	12.07	8.99	12.99	8.98	13.70	7.90
21	13.27	9.08	12.64	7.69	12.00	8.27	---	8.85	---	8.75	13.66	7.51
22	13.50	8.52	13.03	7.64	---	8.49	12.26	8.66	13.27	8.59	13.57	7.13
23	13.64	7.68	---	8.14	12.38	8.60	12.42	8.61	13.40	8.38	13.36	7.14
24	13.70	6.81	13.00	8.20	12.49	8.71	12.75	8.66	13.39	8.08	13.01	7.65
25	13.70	7.16	13.46	8.71	12.50	8.64	12.90	8.66	13.39	7.94	13.13	8.39
26	---	7.72	13.17	8.74	12.35	8.62	12.92	8.74	13.23	7.80	12.86	8.67
27	13.93	7.87	13.00	8.95	12.38	8.76	12.93	8.61	12.87	7.91	12.64	---
28	13.45	8.37	12.79	8.90	12.49	9.06	12.89	8.42	12.56	8.20	---	---
29	13.14	8.96	12.22	8.80	12.76	9.20	12.69	8.34	12.10	---	---	---
30	12.88	9.39	12.14	9.07	12.51	---	12.16	---	12.01	9.41	---	---
31	---	---	12.11	9.22	---	---	11.59	8.16	11.79	9.64	---	---
MEAN	13.14	8.72	12.79	8.83	12.33	8.51	12.60	8.61	12.58	8.37	13.33	8.28
YEAR	13.02	8.69										

Discharge at ungaged sites

Monthly records for the following four sites have been computed by routing methods described in USGS circular 550. Circular 550 contains monthly records for these sites for water year 1928-65, including monthly flows adjusted for major upstream storage. Figures given herein represent unadjusted flows, and are rated fair. Adjusted records are available from the Northwest Water Resources Data Center.

14144700. COLUMBIA RIVER AT VANCOUVER, WASH.--Lat 45°37'15", long 122°40'20", in NE¼NW¼.sec.34, T.2 N., R.1 E., Clark County, Hydrologic Unit 17080001, 5.0 mi (8.0 km) upstream from Willamette River, and at mile 106.5 (171.4 km). Drainage area, 241,000 mi^2 (624,000 km^2) approximately. Records available, monthly discharges October 1927 to current year. Daily discharge for October 1963 to September 1969, published in annual data reports for Oregon, 1965-67, 1969.

14222870. COLUMBIA RIVER AT ST. HELENS, OREG.--Lat 45°51'58", long 122°47'00", Columbia County, Hydrologic Unit 17080003, center of channel at intersection of Township (4/5N) line and Oregon-Washington boundary, 0.6 mi (1.0 km) east of St. Helens, and at mile 86.0 (138.4 km). Drainage area, 253,900 mi^2 (657,600 km^2), approximately. Records available, monthly discharge October 1927 to current year.

14245300. COLUMBIA RIVER AT LONGVIEW, WASH.--Lat 46°06'22", long 122°57'14", Cowlitz County, Hydrologic Unit 17080003, at Longview Bridge, 1.0 mi (1.6 km) south of Longview, 2.0 mi (3.2 km) downstream from Cowlitz River, and at mile 66.0 (106.2 km). Drainage area, 256,700 mi^2 (664,900 km^2), approximately. Records available, monthly discharge October 1927 to current year.

14280000. COLUMBIA RIVER AT MOUTH, NEAR ASTORIA, OREG.--Lat 46°15', long 124°05', Clatsop County, Hydrologic Unit 17080006, center of channel at river mouth, due north from original end of south jetty, 12.3 mi (19.8 km) northwest of Astoria, and at mile 0 (0 km). Drainage area, 258,000 mi^2 (668,000 km^2), approximately. Records available, monthly discharge October 1927 to current year.

MONTHLY AND ANNUAL MEAN DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR 1979

OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	ANNUAL
141447000 COLUMBIA RIVER AT VANCOUVER, WA												
132400	147300	157000	161400	179000	180900	187400	254000	185000	126400	114100	101500	160400
14222870 COLUMBIA RIVER AT SAINT HELENS, OR												
149100	170100	212300	191600	256200	235600	228800	292700	197700	137000	123200	114800	192000
14245300 COLUMBIA RIVER AT LONGVIEW, WA												
154600	179900	227100	200300	274000	244900	236600	301100	203800	140200	125600	118500	200100
14280000 COLUMBIA RIVER AT MOUTH, NEAR ASTORIA, OR												
155700	184200	239100	199400	292000	255600	240600	303300	210600	140900	127800	121500	205400

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained and discharge measurements may have been made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1979

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (ft³s)
		Bear River basin					
12009500	Bear Branch near Naselle, Wa. (Discontinued)	Lat 46°19'48", long 123°54'36", on line between secs.21 and 22, T.10 N., R.10 W., Pacific County, on right bank 3.4 mi (5.5 km) upstream from bridge on U.S. Highway 101 and 5.3 mi (8.5 km) southwest of Naselle.	11.7 (30.3)	1963-75‡, 1976-79	2- 6-79	4.60	750
		Naselle River basin					
12010700	South Fork Naselle River near Naselle, Wa. (Discontinued)	Lat 46°20'39", long 123°48'23", in SW¼SW¼ sec.16, T.10 N., R.9 W., Pacific County, on left bank 25 ft (8 m) downstream from private road bridge, 1,800 ft (550 m) downstream from Davis Creek, 1.4 mi (2.3 km) south of Naselle.	17.9 (46.4)	1964-75‡, 1976, 1977‡, 1978-79	2- 6-79	8.09	2,060
		North Nemah River basin					
12011200	Williams Creek near South Bend, Wa. (Discontinued)	Lat 46°31'49", long 123°51'39", in NW¼NW¼ sec.13, T.12 N., R.10 W., Pacific County, on left bank 0.1 mi (0.2 km) upstream from unnamed tributary, 1.5 mi (2.4 km) upstream from mouth, and 10 mi (16 km) southwest of South Bend.	9.43 (24.42)	1964-74‡, 1975-76 1977‡, 1978-79	2- 6-79	4.14	576
		Willapa River basin					
12012000	Fork Creek near Lebam, Wa. (Discontinued)	Lat 46°33'19", long 123°35'00", in SW¼NW¼ sec.5, T.12 N., R.7 W., Pacific County, on right bank 0.8 mi (1.3 km) upstream from mouth and 1.6 mi (2.6 km) southwest of Lebam.	20.4 (52.8)	1953-70‡, 1971-79	2- 6-79	6.51	2,310
12014500	South Fork Willapa River near Raymond, Wa. (Discontinued)	Lat 46°37'47", long 123°42'07", in SW¼NE¼ sec.8, T.13 N., R.8 W., Pacific County, on left bank 200 ft (61 m) upstream from logging bridge, 0.4 mi (0.6 km) downstream from Rue Creek, 4.0 mi (6.4 km) southeast of junction of U.S. Highway 101 and State Highway 6 at Raymond, and at mile 9.0 (14.5 km).	27.8 (72.0)	1953-71‡, 1972-76 1978-79	2- 6-79	5.54	1,540
		Smith Creek basin					
12015100	Clearwater Creek near Raymond, Wa. (Discontinued)	Lat 46°44'59", long 123°45'59", on line between secs.26 and 35, T.15 N., R.9 W., Pacific County, on right bank 40 ft (12 m) downstream from road crossing, 0.7 mi (1.1 km) upstream from mouth, and 4.5 mi (7.2 km) northwest of Raymond.	3.98 (10.31)	1964-75‡, 1976-79	2- 6-79	2.44	219
		North River basin					
12017000	North River near Raymond, Wa. (Discontinued)	Lat 46°48'27", long 123°50'58", in SE¼SW¼ sec.6, T.15 N., R.9 W., Grays Harbor County, on left bank 1.2 mi (1.8 km) upstream from lower Salmon Creek, 10 mi (16. 1 km) northwest of Raymond, and at mile 6.9 (11.1 km).	219 (567)	1927-77‡, 1978-79	2- 6-79	7.83	6,330
		Chehalis River basin					
12020500	Elk Creek near Doty, Wa. (Discontinued)	Lat 46°37'42", long 123°19'50", in SE¼NE¼ sec.8, T.13 N., R.5 W., Lewis County, on right bank 0.5 mi (0.8 km) upstream from Nine Creek, 1.0 mi (1.6 km) upstream from Deer Creek, 2.6 mi (4.2 km) west of Doty and at mile 2.5 (4.0 km).	46.6 (121)	1944-50‡, 1952-67, 1968-70‡, 1971-72, 1974-79	2- 7-79	7.96	1,670
12024000	South Fork Newaukum River near Onalaska, Wa. (Discontinued)	Lat 46°34'34", long 122°40'58", on south line of SE¼ sec.28, T.13 N., R.1 E., Lewis County, on right bank on upstream side of county road bridge, 1.0 mi (1.6 km) upstream from Lost Creek 1.7 mi (2.7 km) east of Onalaska, and at mile 22.8 (36.7 km).	42.4 (110)	1945-48‡, 1958-71‡, 1972-76, 1978-79	2- 7-79	6.88	2,470
12025300	Salzer Creek near Centralia, Wa. (Discontinued)	Lat 46°41'31", long 122°54'26", in NE¼NE¼ sec.22, T.14 N., R.2 W., Lewis County, on right bank at downstream side of highway bridge, 500 ft (152 m) downstream from unnamed tributary, 2.4 mi (3.9 km) east of KELA Radio Tower in Centralia, and at mile 3.9 (6.3 km).	12.6 (32.6)	1969-71‡, 1972-79	2- 7-79	7.63	300
12032500	Cloquallum Creek at Elma, Wa. (Discontinued)	Lat 47°00'17", long 123°23'11", in SW¼NW¼ sec.36, T.18 N., R.6 W., Grays Harbor County, on right bank 10 ft (3 m) downstream from State Highway 12 bridge, 1.7 mi (2.7 km) east of Elma, 1.9 mi (3.1 km) downstream from Wildcat Creek, and at mile 1.9 (3.1 km).	64.9 (168)	1942-43‡, 1944-72‡, 1973-79	2- 7-79	9.69	3,460

‡ Operated as continuous-record station.

Annual maximum discharge at crest-stage partial-record stations during water year 1979

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum Date	Annual maximum Gage height (feet)	Annual maximum Discharge (ft³/s)
		Quillayute River basin					
12042900	Grader Creek near Forks, Wa.	Lat 47°55'40", long 124°24'25", in SW¼ sec.17 T.28 N., R.13 W., Clallam County, at U.S. Highway 101, 2 mi (3.2 km) southwest of Forks.	1.67 (4.33)	1950-	2- 24-79	20.26	279
		Morse Creek basin					
12047300	Morse Creek near Port Angeles, Wa. (Discontinued)	Lat 48°02'16", long 123°20'57", in SW¼NE¼ sec.5, T.29 N., R.5 W., Clallam County, on right bank at steel foot bridge, 1,000 ft (305 m) downstream from Port Angeles diversion dam, 6.4 mi (10.3 km) upstream from mouth, and 6.8 mi (10.9 km) southeast of ferry terminal in Port Angeles.	46.6 (120.7)	1967-76‡, 1977-79	3- 4-79	5.11	987
		Snow Creek basin					
12050500	Snow Creek near Maynard Wa. (Discontinued)	Lat 47°56'25", long 122°53'12", in NE¼NE¼ sec.11, T.28 N., R.2 W., Jefferson County, on right bank 1,800 ft (549 m) upstream from Andrews Creek, 3.2 mi (5.1 km) south of Uncas, and 4.0 mi (6.4 km) south of Maynard.	11.2 (29.0)	1952-72‡, 1973-79	3- 4-79	2.28	67
		Hamma Hamma River basin					
12054500	Hamma Hamma River near Eldon, Wa. (Discontinued)	Lat 47°35'18", long 123°06'57", in SE¼NW¼ sec.7, T.24 N., R.3 W., Mason County, Olympic National Forest, on left bank 0.3 mi (0.5 km) downstream from Watson Creek, 4.6 mi (7.4 km) northwest of Eldon, and at mile 6.2 (10.0 km).	51.3 (133)	1952-71‡, 1972-79	3- 4-79	3.49	2,030
12054600	Jefferson Creek near Eldon, Wa. (Discontinued)	Lat 47°35'00", long 123°06'18", in SE¼SE¼ sec.7, T.24 N., R.3 W., Mason County, Olympic National Forest, on right bank 0.2 mi (0.3 km) upstream from mouth and 4.0 mi (6.4 km) northwest of Eldon.	21.6 (55.9)	1958-71‡, 1972-79	3- 4-79	7.90	2,320
		Skokomish River basin					
12058000	Deer Meadow Creek near Hoodsport, Wa. (Discontinued)	Lat 47°24'16", long 123°13'16", in NW¼NW¼ sec.8, T.22 N., R.4 W., Mason County, on left bank 0.5 mi (0.8 km) west of Hoodsport.	1.83 (4.74)	1950-73‡, 1974-79	3- 4-79	2.02	151
12059800	South Fork Skokomish River near Hoodsport, Wa. (Discontinued)	Lat 47°26'45", long 123°24'54", in NW¼ sec.35, T.23 N., R.6 W., Mason County, Olympic National Forest, on left bank 100 ft (30 m) downstream from Pine Creek and 13.1 mi (21.1 km) west of Hoodsport.	26.0 (67.3)	1964-70‡, 1972-79	3- 4-79	6.20	3,710
		Tahuya River basin					
12065500	Gold Creek near Bremerton, Wa. (Discontinued)	Lat 47°33'20", long 122°48'35", in NE¼SW¼ sec.21, T.24 N., R.1 W., Kitsap County, on right bank 1.2 mi (1.9 km) upstream from mouth and 8.4 mi (13.5 km) west of Olympic College in Bremerton.	1.51 (3.91)	1946-70‡, 1972-79	2-25-79	3.48	91
		Dewatto River basin					
12068500	Dewatto River near Dewatto, Wa. (Discontinued)	Lat 47°28'10", long 123°01'33", in NE¼SW¼ sec.23, T.23 N., R.3 W., Mason County, on right bank 400 ft (122 m) downstream from highway bridge, 2.0 mi (3.2 km) upstream from mouth, and 2.2 mi (3.5 km) northeast of Dewatto.	18.4 (47.7)	1947-54‡, 1955-57, 1958-74‡, 1975-79	2-25-79	3.83	880
		Chico Creek basin					
12072000	Chico Creek near Bremerton, Wa. (Discontinued)	Lat 47°35'28", long 122°42'29", in NE¼NW¼ sec.8, T.24 N., R.1 E., Kitsap County, on left bank at highway crossing, 0.5 mi (0.8 km) downstream from Dickerson Creek, and 3.7 mi (6.0 km) northwest of Olympic College in Bremerton.	15.3 (39.6)	1947-50‡, 1961-74‡, 1975-79	2-25-79	3.54	393
		Goldsborough Creek basin					
12076500	Goldsborough Creek near Shelton, Wa. (Discontinued)	Lat 47°12'56", long 123°10'52", in NW¼NW¼ sec.22, T.20 N., R.4 W., Mason County, on right bank 100 ft (30 m) upstream from road bridge, 3.8 mi (6.1 km) west of Shelton, and 5.5 mi (8.8 km) upstream from mouth.	39.3 (102)	1952-71‡, 1972-79	3- 4-79	5.14	690

‡ Operated as continuous-record station.

Annual maximum discharge at crest-stage partial-record stations during water year 1979

Station No.	Station name	Location	Drainage area mi^2 (km^2)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (ft^{3}s)
		Kennedy Creek basin					
12078400	Kennedy Creek near Kamilche, Wa. (Discontinued)	Lat 47°04'37", long 123°07'33", in SW¼NE¼ sec.1, T.18 N., R.4 W., Mason County, on left bank 100 ft (30 m) upstream from Kennedy Falls, 2.2 mi (3.5 km) upstream from mouth at Oyster Bay, and 3.9 mi (6.3 km) south of Kamilche.	17.4 (45.1)	1961-74‡, 1972-74 1976-79	3- 4-79	3.36	532
		Deschutes River basin					
12079000	Deschutes River near Rainier, Wa. (Discontinued)	Lat 46°51'08", long 122°40'03", in SE¼SW¼ sec.22, T.16 N., R.1 E., Thurston County, on right bank 75 ft (23 m) upstream from county road crossing, 0.4 mi (0.6 km) downstream from outlet of Reichel Lake, 2.7 mi (4.3 km) southeast of Rainier, and at mile 25.9 (41.7 km).	89.8 (232.6)	1949-75‡, 1976-79	2- 6-79	10.63	3,670
		McAllister Creeek basin					
12081300	Eaton Creek near Yelm, Wa.	Lat 46°58'05", long 122°43'30", in S½ sec.7, T.17 N., R.1 E., Thurston County, at county road, 6 mi (9.6 km) northwest of Yelm.	2.28 (5.91)	1960-	2- 6-79	5.00	24
		Judd Creek basin					
12091700	Judd Creek near Burton, Wa. (Discontinued)	Lat 47°24'40", long 122°28'18", in NE¼SW¼ sec.7, T.22 N., R.3 E., King County, on right bank at upstream side of culvert at 216th Street S.W., 1.0 mi (1.6 km) upstream from mouth, and 1.5 mi (2.4 km) north of Burton.	4.41 (11.42)	1968-75‡, 1976-79	2-12-79	3.23	a50
		Puyallup River basin					
12095000	South Prairie Creek at South Prairie, Wa. (Discontinued)	Lat 47°08'23", long 122°05'28", in NE¼NW¼ sec.18, T.19 N., R.6 E., Pierce County, on left bank 30 ft (9 m) downstream from railroad bridge, 200 ft (61 m) upstream from bridge on State Highway 162, 0.3 mi (0.5 km) east of South Prairie and at mile 5.9 (9.5 km).	79.5 (206)	1950-71‡, 1972-79	12- 2-75 2- 6-79	*7.33 6.55	*3,700 2,770
12097000	White River at Greenwater, Wa. (Discontinued)	Lat 47°08'48", long 121°38'44", in NW¼SE¼ sec.10, T.19 N., R.9 E., Pierce County, on right bank 0.7 mi (1.1 km) southeast of Greenwater, 1.0 mi (1.6 km) upstream from Greenwater River, and at mile 46.8 (75.3 km).	216 (559)	1929-75‡	12- 2-75 12- 2-77	8.86 9.79	b13,900 b17,800
		Lake Washington basin					
12115300	Green Point Creek near Cedar Falls, Wa.	Lat 47°23'20", long 121°40'30", in SE¼ sec.17, T.22 N., R.9 E., King County, at road crossing, near mouth, 5 mi (8.0 km) southeast of Cedar Falls.	0.89 (2.31)	1957-	3- 6-79	11.53	46
12119700	Coal Creek near Bellevue, Wa. (Discontinued)	Lat 47°34'00", long 122°10'45", in NW¼SW¼ sec.16, T.24 N., R.5 E., King County, 0.8 mi (1.3 km) upstream from mouth and 3 mi (4.8 km) south of Bellevue.	6.80 (17.6)	1964-68‡, 1969-79	2-12-79	2.66	145
		Snohomish River basin					
12142300	Hancock Creek near Snoqualmie, Wa.	Lat 47°34'21", long 121°41'12", in SE¼SE¼ sec.8, T.24 N., R.9 E., King County, on left bank 300 ft (91 m) downstream from Lake Hancock outlet, 1.5 mi (2.4 km) upstream from mouth, and 7.2 mi (11.6 km) northeast of Snoqualmie.	7.67 (19.9)	1965-71‡, 1972-	3- 6-79	2.30	370
12146000	Patterson Creek near Fall City, Wa.	Lat 47°34'52", long 121°56'23", in SW¼NE¼ sec.8, T.24 N., R.7 E., King County, on left bank 150 ft (46 m) upstream from private road bridge 2.6 mi (4.2 km) northwest of Fall City, and at mile 1.9 (3.1 km).	15.5 (40.1)	1948-50‡, 1956-71‡, 1972-	2-12-79	5.20	265
12147000	Griffin Creek near Carnation, Wa.	Lat 47°36'58", long 121°54'13", in SW¼SW¼ sec.27, T.25 N., R.7 E., King County, on left bank 0.2 mi (0.3 km) upstream from bridge on State Highway 203, 2.3 mi (3.7 km) south of Carnation, and at mile 0.9 (1.4 km).	17.1 (44.3)	1946-70‡, 1972-	2-12-79	3.58	320
12152500	Pilchuck River near Granite Falls, Wa.	Lat 48°03'15", long 121°57'25", in SE¼ sec.30, T.30 N., R.7 E., Snohomish County, on right bank 200 ft above county road bridge and 2 mi (3.2 km) southeast of Granite Falls.	54.4 (141)	1944-57‡, 1958-	3- 6-79	6.57	2,960
		Stillaguamish River basin					
12168500	Pilchuck Creek near Bryant, Wa. (Discontinued)	Lat 48°15'58", long 122°09'46", in NE¼NE¼ sec.16, T.32 N., R.5 E., Snohomish County, on right bank 500 ft (152 m) upstream from bridge on State Highway 9, 1.8 mi (2.9 km) north of Bryant, and at mile 6.4 (10.3 km).	52.0 (134.7)	1929-31‡, 1950-75‡, 1976-79	3- 6-79	5.32	2,410

‡ Operated as continuous-record station.

* Revised.

a The annual minimum discharge was determined to be 0.08 ft^3/s on Jan. 9, 1979 from recorded gage height and stage-discharge relation rating.

b Not previously published.

Annual maximum discharge at crest-stage partial-record stations during water year 1979

Station No.	Station name	Location	Drainage area mi^2 (km^2)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (ft^{3}s)
		Skagit River basin					
12189400	Sauk River tributary near Darrington, Wa.	Lat 48°20'30", long 121°33'00", in SE¼ sec.18, T.33 N., R.10 E., Skagit County, at Darrington-Concrete road, 6.5 mi (10.5 km) northeast of Darrington.	1.30 (3.37)	1951-70, 1978-	3- 7-79	73.60	58
12196000	Alder Creek near Hamilton, Wa. (Discontinued)	Lat 48°31'42", long 121°56'58", in NW¼NE¼ sec.18, T.35 N., R.7 E., Skagit County, on left bank 3 ft (1 m) downstream from logging road culvert, 0.3 mi (0.5 km) upstream from bridge on State Highway 20, 2.0 mi (3.2 km) east of Hamilton and at mile 0.8 (1.3 km).	10.7 (27.7)	1944-71‡, 1972-79	11- 3-78	6.37	120
12196200	Day Creek below Day Lake, near Lyman, Wa. (Discontinued)	Lat 48°24'32", long 121°58'47", in SE¼NW¼ sec.25, T.34 N., R.6 E., Skagit County, on right bank 1,000 ft (305 m) downstream from outlet of Day Lake, 8.9 mi (14.3 km) southeast of Lyman, and at mile 10.4 (16.7 km).	6.56 (16.99)	1963-71‡, 1973-79	11- 3-78	4.64	480
		Samish River basin					
12201500	Samish River near Burlington, Wa. (Discontinued)	Lat 48°32'44", long 122°20'19", in SE¼SE¼ sec.6, T.35 N., R.4 E., Skagit County, on left bank 500 ft (152 m) downstream from bridge on U.S. Highway 99, 0.5 mi (0.8 km) downstream from Friday Creek, 5.0 mi (8.0 km) north of Burlington, and at mile 10.3 (16.6 km).	87.8 (227)	1944-71‡, 1972-79	11- 3-78	6.64	1,340
		Nooksack River basin					
12204400	Nooksack River tributary near Glacier, Wa.	Lat 48°54'30", long 121°48'20", in SW¼ sec.32, (unsurveyed), T.40 N., R.8 E., Whatcom County, at State Highway 542, 6.5 mi (10.5 km) east of Glacier.	1.15 (2.98)	1956-60, 1962-	11- 7-78	16.86	86
12209000	South Fork Nooksack River near Wickersham, Wa.(Discontinued)	Lat 48°39'52", long 122°09'56", in lot 2, SW¼SW¼ sec.26, T.37 N., R.5 E., Whatcom County, on left bank 0.5 mi (0.8 km) upstream from Skookum Creek, 3.7 mi (6.0 km) east of Wickersham, and at mile 14.8 (23.8 km).	103 (267)	1934-78‡, 1978-79	11- 7-78	7.85	6,180
12212800	Tenmile Creek tributary No. 2 near Bellingham, Wa.	Lat 48°50'35", long 122°24'30", 0.2 mi (0.3 km) north from center of sec.27, T.39 N., R.3 E., Whatcom County, at Starry Road, 2.8 mi (4.5 km) northwest of Noon, and 7 mi (11.3 km) northeast of Bellingham.	.24 (.62)	1956 -	3- 7-79	5.96	6.5
		Wind River basin					
14128500	Wind River near Carson, Wa. (Discontinued)	Lat 45°44'10", long 121°48'12", in SW¼NE¼ sec.21, T.3 N., R.8 E., Skamania County, on right bank 0.8 mi (1.3 km) upstream from Little Wind River, 1.0 mi (1.6 km) northeast of Carson, and 1.9 mi (3.1 km) upstream from mouth. Records include flow of Little Wind River.	225 (583)	1934-77‡, 1978-79	2- 7-79	12.38	8,500
		Groeneveld Creek basin					
14144600	Groeneveld Creek near Camas, Wa.	Lat 45°35'10", long 122°27'28", sec.41, T.1 N., R.3 E., Clark County, at private road 15 ft (5 m) east of county road, 0.4 mi (0.6 km) above mouth, and 2.5 mi (4.0 km) west of Camas city center.	0.51 (1.32)	1958-	2- 7-79	12.72	50
		Lake River basin					
14212000	Salmon Creek near Battle Ground, Wa. (Discontinued)	Lat 45°46'26", long 122°26'40", in NE¼SW¼ sec.4, T.3 N., R.3 E., Clark County, on left bank 100 ft (30 m) upstream from highway bridge, 150 ft (46 m) downstream from Rock Creek, 4.3 mi (6.9 m) east of Battle Ground, and at mile 22.1 (35.6 km).	18.3 (47.4)	1944-75‡, 1976-79	2- 7-79	3.44	820
		Lewis River basin					
14213500	Big Creek below Skookum Meadow near Trout Lake, Wa.(Discontinued)	Lat 46°05'36", long 121°51'50", Skamania County, Gifford Pinchot National Forest 40 ft (12 m) upstream from forest service road, just downstream from Skookum Meadow, 3 mi (4.8 km) upstream from mouth and 17 mi (27.4 km) northwest of Trout Lake.	13.2 (34.2)	1928-31‡, 1956-70‡, 1971-79	2- 7-79	5.89	290

‡ Operated as continuous-record station.

Annual maximum discharge at crest-stage partial-record stations during water year 1979

Station No.	Station name	Location	Drainage area mi^2 (km^2)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (ft^{3}s)
		Kalama River basin					
14223500	Kalama River below Italian Creek, near Kalama, Wa. (Discontinued)	Lat 46°02'42", long 122°48'51", in NE¼SW¼ sec.33, T.7 N., R.1 W., Cowlitz County, on right bank 2.8 mi (4.5 km) northeast of Kalama, 5.7 mi (9.2 km) downstream from Italian Creek, and at mile 4.2 (6.8 km).	198 (513)	1946-75‡, 1976-79	2- 7-79	9.94	8,820
		Cowlitz River basin					
14226900	Skate Creek tributary No. 2 near Packwood, Wa.	Lat 46°40'30", long 121°45'10", in NE¼ sec.26, T.14 N., R.8 E., Lewis County, at Skate Creek road 6 mi (9.7 km) northwest of Packwood.	1.82 (4.71)	1959-75, 1978-	12- 2-77 2- 7-79	b16.75 10.34	b371 73
14235500	West Fork Tilton River near Morton, Wa. (Discontinued)	Lat 46°36'40", long 122°14'36", in NE¼SE¼ sec.13, T.13 N., R.4 E., Lewis County, on left bank 0.9 mi (1.4 km) upstream from mouth and 3.8 mi (6.1 km) northeast of Morton.	16.4 (42.5)	1951-71‡, 1972-79	2- 7-79	5.64	2,160
14239000	Salmon Creek near Toledo, Wa. (Discontinued)	Lat 46°24'50", long 122°49'15", in NW¼NW¼ sec.28, T.11 N., R.1 W., Lewis County, on right bank 0.2 mi (0.3 km) downstream from Little Salmon Creek, 2.2 mi (3.5 km) southeast of Toledo, and at mile 3.3 (5.3 km).	77.6 (201)	1962-71‡, 1972-79	2- 7-79	6.94	1,610
		Elochoman River basin					
14247500	Elochoman River near Cathlamet, Wa. (Discontinued)	Lat 46°13'17", long 123°20'28", in NE¼SE¼ sec.31, T.9 N., R.5 W., Wahkiakum County, on right bank 125 ft (38 m) upstream from railroad bridge, 2.4 mi (3.9 km) northeast of Cathlamet, and at mile 5.0 (8.0 km).	65.8 (170)	1941-71‡, 1972-79	2- 6-79	8.49	4,390
		Jim Crow Creek basin					
14248200	Jim Crow Creek near Grays River, Wa. (Discontinued)	Lat 46°16'37", long 123°33'37", in NE¼SW¼ sec.9, T.9 N., R.7 W., Wahkiacum County, on left bank 600 ft (180 m) downstream from logging bridge, 900 ft (270 m) upstream from Fink Creek, 1.5 mi (2.4 km) upstream from mouth, and 6.0 mi (9.7 km) southeast of the town of Grays River.	5.48 (14.19)	1964-74‡, 1975-79	2- 6-79	5.89	731
		Grays River basin					
14249000	Grays River above South Fork, near Grays River, Wa. (Discontinued)	Lat 46°23'36", long 123°28'39", in NW¼ sec.31, T.11 N., R.6 W., Pacific County, on right bank 500 ft (152 m) upstream from the South Fork 6.8 mi (10.9 km) northeast of town of Grays River and at mile 17.8 (28.6 km).	39.9 (103.3)	1956-75‡, 1976-79	2- 6-79	9.60	5,800

‡ Operated as continuous-record station.

b Not previously published.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^{3}s)
		Willapa River basin				
12011500 Willapa River	Willapa Bay	Lat 46°33'50", long 123°33'49", in SW¼SW¼ sec.33, T.13 N., R.7 W., Pacific County, 0.2 mi (0.3 km) downstream from bridge on State Highway 6, 0.5 mi (0.8 km) west of Lebam, and at mile 33.9 (54.5 km).	41.4	1948-71‡, 1972-74a, 1978	11-22-78 1-23-79 3-13-79 5- 8-79 7-25-79	144 91.8 151 168 7.18
		Minor basins between North and Chehalis River basins				
12017330 Pacific County Drainage Ditch No. 1	Willapa Bay	Lat 46°44'08", long 124°03'56", in NE¼NE¼ sec.5, T.14 N., R.11 W., Pacific County, at Smith-Anderson Road, 4.1 mi (6.6 km) northwest of Tokeland.	----	1978	11-21-78 1-22-79 2- 7-79 3-12-79 5- 8-79 5-22-79 6-27-79 8- 8-79	16.9 21.6 82.0 16.7 15.0 6.04 3.63 3.22
		Chehalis River basin				
12020565 Chehalis River	Grays Harbor	Lat 46°37'55", long 123°14'59", NE¼ sec.12, T.13 N., R.4 W., Lewis County, at Chandler Road bridge, 1.0 mi (1.6 km) west of Rainbow Falls State Park bridge, 1.3 mi (2.1 km) east of Doty, and at mile 98.0 (158 km).	----	1978	11-27-78 1-30-79 3-13-79 5-23-79 7-25-79 9-11-79	500 305 737 213 58.4 161
12022250 Chehalis River	Do.....	Lat 46°37'40", long 123°03'35", in SW¼NE¼ sec.9, T.13 N., R.3 W., Lewis County, at State Highway 6 bridge at Adna and at mile 81.3 (131 km).	383	1972, 1975-78	6-28-79 8-16-79	117 78.9
12024100 South Fork Newaukum River	Newaukum River	Lat 46°36'14", long 122°51'15", in NW¼NE¼ sec.19, T.13 N., R.1 W., Lewis County, at county bridge, 0.3 mi (0.5 km) northeast of Forest, 0.2 mi (0.3 km) upstream from North Fork Newaukum River, and at mile 11.1 (17.9 km).	66.2	1976-78	6-28-79 8-16-79	40.2 24.6
12024500 North Fork Newaukum Creek	Do.....	Lat 46°39'17", long 122°46'45", in NW¼SW¼ sec.35, T.14 N., R.1 W., Lewis County, at county road, 1.4 mi (2.3 km) upstream from Lucas Creek, 5.5 mi (8.8 km) northeast of Forest, and at mile 6.6 (10.6 km).	31.5	1942-43, 1944-45‡, 1957-66‡, 1967, 1976-78	6-28-79 8-16-79	12.6 6.80
12025500 Chehalis River	Grays Harbor	Lat 46°42'45", long 122°58'38", in NE¼SE¼ sec.7, T.14 N., R.2 W., Lewis County, at Mellon Street Bridge on west edge of Centralia, 0.6 mi (1.0 km) upstream from Skookumchuck River, and at mile 67.5 (108.6 km).	653	1910-11, 1978	12-12-78 3- 1-79 9-11-79	3,040 5,540 412
12029500 Garrard Creek	Chehalis River	Lat 46°48'34", long 123°16'15", in SW¼SE¼ sec.2, T.15 N., R.5 W., Grays Harbor County, at county road, 2.8 mi (4.5 km) southwest of Oakville, and at mile 2.6 (4.2 km).	26.5	1942-43, 1944-45‡, 1958, 1961, 1976-78	6-28-79 8-16-79	6.92 4.37
12032500 Cloquallum Creek	Do.....	Lat 47°00'17", long 123°23'11", in SW¼NW¼ sec.36, T.18 N., R.6 W., Grays Harbor County, 10 ft (3 m) downstream from State Highway 12 bridge, 1.7 mi (2.7 km) east of Elma, 1.9 mi (3.1 km) downstream from Wildcat Creek, at mile 1.9 (3.1 km).	64.9	1942-43‡, 1944-72‡, 1973-79a, 1974-78	6-27-79 7-13-79	38.3 45.3
12035002 Chehalis River	Grays Harbor	Lat 46°57'53", long 123°31'12", in NW¼NE¼ sec.14, T.17 N., R.7 W., Grays Harbor County, 2.2 mi (3.5 km) downstream from Satsop River, 3.2 mi (5.1 km) southwest of Satsop, and at mile 18.0 (29.0 km).	----	1978	10-17-78 6- 1-79 8- 2-79	1,710 1,480 666
12038005 Wishkah River	Chehalis River	Lat 47°04'20", long 123°46'09", in NE¼SW¼ sec.2, T.18 N., R.9 W., Grays Harbor county, at Wishkah Road, 0.1 mi (0.2 km) upstream from East Fork, 1.0 mi (1.6 km) north of Aberdeen Gardens, and at mile 12.3 (19.8 km).	59.9	1956, 1962-64, 1966, 1976-78	6-27-79 7-13-79	65.7 93.5
		Hoquiam River basin				
12038660 East Fork Hoquiam River	Hoquiam River	Lat 47°03'32", long 123°50'04", in NW¼SW¼ sec.8, T.18 N., R.9 W., Grays Harbor County, 0.2 mi (0.3 km) upstream from Berryman Creek, 3.0 mi (4.8 km) west of Aberdeen Gardens, and at mile 7.3 (11.7 km).	25.8	1942-43, 1976-78	6-27-79 7-13-79	27.4 33.9

‡ Operated as continuous record station.
a Operated as a crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^{3}s)
		Hoh River basin				
12041230 Chalaat Creek	Hoh River	Lat 47°44'33", long 124°24'58", in NW¼SW¼ sec.20, T.26 N., R.13 W., Jefferson County, Hoh Indian Reservation, at road crossing near treatment plant, 0.8 mi (1.3 km) upstream from mouth, and 9.9 mi(15.9 km) northwest of Kalaloch.	----	1978	10-11-78	1.75
					12- 9-78	1.80
					1-31-79	1.48
					4- 2-79	3.84
					6- 4-79	1.84
					8- 6-79	.47
					10- 4-79	.41
12041234 Chalaat Creek	Do.....	Lat 47°44'45", long 124°25'20", in SE¼NE¼ sec.19, T.26 N., R.13 W., Jefferson County, Hoh Indian Reservation, at road crossing near Community Center, 0.3 mi (0.5 km) upstream from mouth, and 10.2 mi (16.4 km) northwest of Kalaloch.	----	1978	10-11-78	1.87
					12- 9-78	2.71
					1-31-79	2.85
					4- 2-79	6.67
					6- 4-79	2.05
					8- 6-79	.75
					10- 4-79	.60
		Dungeness River basin				
Dungeness River	New Dungeness Bay	Lat 48°04'34", long 123°08'57", SE¼SE¼ sec.23, T.30 N., R.4 W., Clallam County, at U.S Highway 101, 2.3 mi (3.7 km) west of Sequim, and at mile 6.4 (10.3 km).	178	1972	9-12-78	c461
					10-12-78	104
					11-13-78	126
					12-13-78	129
					1-16-79	73.2
					2-15-79	203
					3-15-79	345
					4-16-79	209
					5-15-79	342
					6-18-79	186
					7-16-79	150
					8-14-79	52.1
					9-11-79	140
Do.....	Do.....	Lat 48°06'58", long 123°08'54", SE¼SE¼ sec.2, T.30 N., R.4 W., Clallam County, at Woodcock Road, 3.2 mi (5.1 km) northwest of Sequim, and at mile 3.2 (5.1 km).	183	1952	9-12-78	c440
					10-13-78	98.3
					11-13-78	120
					12-13-78	120
					1-16-79	64.2
					2-15-79	203
					3-15-79	377
					4-16-79	216
					5-15-79	333
					6-18-79	193
					7-16-79	164
					8-14-79	48.8
					9-11-79	141
Matriotti Creek	Dungeness River	Lat 48°08'12", long 123°08'39", in NE¼SE¼ sec.35, T.31 N., R.4 W., Clallam County, at Ward Road, 4.5 mi (7.2 km) northwest of Sequim, at mile 0.2 (0.3 km).	13.6	1952-53, 1961	10-12-78	11.3
					11-13-78	11.2
					12-13-78	15.0
					1-16-79	11.5
					2-15-79	16.1
					3-15-79	12.8
					4-16-79	12.5
					5-15-79	17.0
					6-18-79	19.4
					7-16-79	20.4
					8-14-79	10.9
					9-11-79	15.4
12049000 Dungeness River	New Dungeness Bay	Lat 47°08'38", long 123°07'38", in NE¼NE¼ sec.36, T.31 N., R.4 W., Clallam County, at School Road 0.5 mi (0.8 km) southwest of Dungeness, and at mile 0.9 (1.4 km).	197	1898, 1899-1902‡	9-12-78	c440
					10-12-78	121
					11-13-78	136
					12-13-78	156
					1-16-79	74.1
					2-15-79	227
					3-15-79	385
					4-16-79	239
					5-15-79	363
					6-18-79	226
					7-16-79	193
					8-14-79	67.2
					9-11-79	176
		Minor basins on Kitsap Peninsula				
12072681 Crescent Creek	Gig Harbor	Lat 47°21'02", long 122°34'44", in NE¼SW¼ sec.32, T.22 N., R.2 E., Pierce County, at private road crossing, 0.3 mi (0.48 km) upstream from mouth, and 1.0 mi (1.6 km) north of Gig Harbor.	----	----	2-17-78	c9.06
					3-15-78	c7.87
					4-17-78	c8.69
					5-15-78	c9.89
					6-15-78	c3.91
					7-13-78	c2.74
					8-14-78	c2.28
					9-15-78	c3.51
					10-16-78	2.62
					11-14-78	3.44
					12-18-78	5.23
					1-18-79	4.52

‡ Operated as continuous record station.
c Not previously published.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^{3}s)
		Minor basins on Kitsap Peninsula--Continued				
12072685 North Creek	Gig Harbor	Lat 47°20'14", long 122°35'37", in NW¼SE¼ sec.6, T.21 N., R.2 E., Pierce County, at road crossing 400 ft (122 m) north of sewage treatment plant, at Gig Harbor.	2.04	----	2-17-78	c2.24
					3-15-78	c2.07
					4-17-78	c2.06
					5-15-78	c2.86
					6-15-78	c1.21
					7-13-78	c1.06
					8-14-78	c1.20
					9-15-78	c1.13
					10-16-78	1.01
					11-14-78	1.26
					12-18-78	1.31
					1-18-79	1.10
12072710 Artondale Creek	Wollochet Bay	Lat 47°17'55", long 122°37'04", in NW¼NE¼ sec.24, T.21 N., R.1 E., Pierce County, at Wollochet Road crossing, 200 ft (61 m) upstream from mouth, and 3.0 mi (4.8 km) southwest of Gig Harbor.	2.99	1947, 1958	2-17-78	c3.79
					3-15-78	c2.91
					4-17-78	c4.02
					5-15-78	c4.80
					6-15-78	c1.70
					7-13-78	c1.06
					8-14-78	c.85
					9-15-78	c1.86
					10-16-78	1.31
					11-14-78	1.65
					12-18-78	2.09
					1-18-79	2.16
12072750 Meyer Creek (formerly published as Carr Inlet tributary #3	Carr Inlet	Lat 47°19'49", long 122°38'54", in SW¼SW¼ sec.2, T.21 N., R.1 E., Pierce County, at Rosedale Road crossing, 200 ft (61 m) upstream from mouth at Rosedale.	b.15	1947, 1958, 1974-75	2-17-78	c1.79
					3-15-78	c1.55
					4-17-78	c1.62
					5-15-78	c1.68
					6-15-78	c1.23
					7-13-78	c1.03
					8-14-78	c.90
					9-15-78	c1.09
					10-16-78	.99
					11-14-78	1.22
					12-18-78	1.36
					1-18-79	1.41
12072770 McCormick Creek	Henderson Bay	Lat 47°22'16", long 122°37'21", in NE¼NW¼ sec.25, T.22 N., R.1 E., Pierce County, at old McCormick Road crossing, 200 ft (61.0 m) upstream from mouth and 1.0 mi (1.6 km) south of Purdy.	2.36	1947, 1958, 1974-75	2-17-78	c3.02
					3-15-78	c3.12
					4-17-78	c3.36
					5-15-78	c4.64
					6-15-78	c1.82
					7-13-78	c1.26
					8-14-78	c1.15
					9-15-78	c1.34
					10-16-78	1.21
					11-14-78	1.38
					12-18-78	1.60
					1-18-79	1.59
12072795 Purdy Creek	Do.....	Lat 47°24'12", long 122°36'49", in NE¼NE¼ sec.13, T.22 N., R.1 E., at Kitsap County-Pierce County line, at road crossing, 1.4 mi (2.3 km) northeast of Purdy.	----	----	4-17-78	c3.65
					10-16-78	1.09
12072800 Purdy Creek	Do.....	Lat 47°23'20", long 122°37'28", on north line NW¼ sec.24, T.22 N., R.1 E., Pierce County, at Purdy-Crescent Road, 650 ft (200 m) upstream from mouth, and 0.4 mi (0.6 km) north of Purdy.	3.44	1947, 1958-59, 1960-62‡, 1963-64	2-17-78	c7.23
					3-15-78	c5.40
					4-17-78	c7.29
					5-15-78	c8.67
					6-15-78	c3.42
					7-13-78	c2.16
					8-14-78	c1.86
					9-15-78	c2.54
					10- 6-78	2.28
					11-14-78	2.64
					12-18-78	4.36
					1-18-79	3.50
12073490 Huge Creek	Minter Creek	Lat 47°24'13", long 122°42'11", on south line sec.8, T.22 N., R.1 E., at Kitsap County-Pierce County line at county road, 4.0 mi (6.4 km) northwest of Purdy.	----	----	4-17-78	c6.70
					7-13-78	c3.68
					10-17-78	2.82
Minter Creek	Henderson Bay	Lat 47°24'13", long 122°41'05", near center of south line, sec.9, T.22 N., R.1 E., at Kitsap County-Pierce County line, 2.6 mi (4.2 m) northwest of Wauna.	----	----	7-13-78	c3.80
		Minor Stream tributary to Eld Inlet basin				
Allison Springs	Eld Inlet	Lat 47°02'37", long 122°59'06", in NE¼SW¼ sec.18, T.18 N., R.2 W., Thurston Countym at spring outlet, 0.4 mi (0.6 km) west of McLane School, and 4.0 mi (6.4 km) west of Olympia.	----	1977-78	3-14-79	3.84
					5-10-79	4.07
					7- 9-79	3.71
					9- 6-79	3.40

‡ Operated as continuous record station.

c Not previously published.

b Revised.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft³s)
		Deschutes River basin				
Deschutes River	Budd Inlet	Lat 46°47'31", long 122°23'29", in SE¼SW¼ sec.11, T.15 N., R.3 E., Thurston County, 0.1 mi (0.2 km) upstream from mouth of Little Deschutes River, 4.6 mi (7.4 km) southwest of La Grande, and at river mile 43.5 (70.0 km).	23.1	1977-78	6-12-79	23.7
Little Deschutes River	Deschutes River	Lat 46°47'31", long 122°23'19", in SW¼SE¼ sec.11, T.15 N., R.3 E., Thurston County, 0.2 mi (0.3 km) upstream from mouth and and 4.2 mi (6.8 km) southwest of La Grande.	7.89	1977-78	6-12-79	2.22
Thurston Creek	Do.....	Lat 46°47'49", long 122°26'26", in NW¼SW¼ sec.9, T.15 N., R.3 E., Thurston County, 200 ft (61 m) upstream from Weyerhauser gage, 200 ft (61 m) upstream from logging road crossing and 6.5 mi (10.5 km) southwest of La Grande.	4.63	1977-78	6-12-79	3.48
Johnson Creek	Do.....	Lat 46°47'38", long 122°26'46", in SE¼SE¼ sec.8, T.15 N., R.3 E., Thurston County, at logging road crossing at Weyerhauser gage and 6.6 mi (10.6 km) southwest of La Grande.	2.20	1977-78	6-12-79	.34
12078850 Deschutes River	Budd Inlet	Lat 46°47'44", long 122°27'22", in SE¼SW¼ sec.8, T.15 N., R.3 E., Thurston County, at private bridge at Trails End Estates, 1.0 mi (1.6 km) upstream from Mitchell Creek, 7.3 mi (11.7 km) southwest of La Grande.	44.1	1949-50, 1963, 1965-71, 1977-78	6-12-79	25.8
12078900 Mitchell Creek	Deschutes River	Lat 46°47'26", long 122°28'00", in NE¼NE¼ sec.18, T.15 N., R.3 E., Thurston County, at logging road crossing 0.2 mi (0.3 km) upstream from mouth, 7.7 mi (12.4 km) southwest of La Grande.	8.54	1963, 1965-71, 1977-78	6-12-79	4.56
Fall Creek	Do.....	Lat 46°48'11", long 122°30'23", in SW¼NW¼ sec.12, T.15 N., R.2 E., Thurston County, at logging road crossing, 7.8 mi (12.6 km) southeast of Vail.	2.83	1977-78	6-12-79	.33
Pipeline Creek	Do.....	Lat 46°49'44", long 122°33'37", in center of sec. 33, T.16 N., R.2 E., Thurston County, at old logging road crossing and 4.8 mi (7.7 km) southeast of Vail.	3.50	1977-78	6-12-79	.18
Lake Lawrence Outlet	Do.....	Lat 46°50'54", long 122°34'55", in NE¼NW¼ sec.29, T.16 N., R.2 E., Thurston County, at county road crossing, 0.1 mi (0.2 km) downstream from Lake Lawrence and 5.8 mi (9.3 km) southeast of Rainier.	3.35	1974, 1977-78	6-12-79	0
Reichel Lake Outlet	Do.....	Lat 46°50'23", long 122°39'10", in NW¼SW¼ sec.26, T.16 N., R.1 E., Thurston County, at Vail Loop Road crossing 0.5 mi (0.8 km) southeast of Vail and 3.2 mi (5.1 km) downstream from Reichel Lake.	6.82	1977-78	6-12-79	0
12079000 Deschutes River	Budd Inlet	Lat 46°51'08", long 122°40'03", in SE¼SW¼ sec.22, T.16 N., R.1 E., Thurston County, at county road crossing, 0.4 mi (0.6 km) downstream from outlet of Reichel Lake, 2.7 mi (4.3 km) southeast of Rainier, and at mile 25.9 (41.7 km).	89.8	1949-75‡, 1976-79a, 1976-78	10-10-78 12- 7-78 2-13-79 4- 5-79 6-13-79 8- 8-79	50.4 175 900 160 53.2 28.1
Offutt Lake tributary	Offutt Lake	Lat 48°54'30", long 122°50'14", in NE¼NW¼ sec.5, T.16 N., R.1 W., Thurston County, 75 ft downstream from Offutt Lake road, 0.3 mi (0.48 km) upstream from Offutt Lake and 4.0 mi(6.4 km) south of East Olympia.	.68	1972	6-13-79	e.05
12079382 Offutt Lake Outlet	Deschutes River	Lat 46°55'13", long 122°48'46", in NE¼NW¼ sec.33, T.17 N., R.1 W., Thurston County, at Waldrick Road crossing, 0.3 mi (0.5 km) downstream from Offutt Lake, and 3.5 mi (5.6 km) southeast of East Olympia.	1.85	1972-73 1977	10-16-78 6-13-79	0 0
12079400 Deschutes River	Budd Inlet	Lat 46°56'43", long 122°50'55", in NW¼SE¼ sec.19, T.17 N., R.1 W., Thurston County, at Rich Road crossing, 0.5 mi (0.8 km) upstream from Spurgeon Creek, 4.4 mi (7.1 km) southeast of Tumwater, and at mile 11.0 (17.7 km).	127	1977	10-16-78 6-13-79	74.2 82.8
12079500 Spurgeon Creek	Deschutes River	Lat 46°56'58", long 122°50'35", on center of west line NW¼ sec.20, T.17 N., R.1 W., Thurston County, at Rich Road crossing, 0.25 mi (0.40 km) upstream from mouth and 7.2 mi (11.6 km) southeast of Olympia.	10.8	1950‡, 1951, 1977	10-16-78 6-13-79	6.74 6.92
Deschutes River tributary No. No. 2	Do.....	Lat 46°59'24", long 122°51'14", in SE¼NW¼ sec.6, T.17 N., R.1 W., Thurston County, at road crossing 1.9 mi (3.1 km) northwest of East Olympia.	13.8	1949	6-13-79	1.43

‡ Operated as continuous-record station.
a Operated as crest-stage gage.
e Estimated.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^{3}s)
Deschutes River basin--Continued						
12080000 Deschutes River	Budd Inlet	Lat 47°00'05", long 122°53'40", in NW¼SE¼ sec.35, T.18 N., R.2 W., Thurston County, 2.5 mi (4.0 km) south of Olympia, at mile 3.4 (5.5 km).	160	1945-55‡, 1957-64‡, 1955-57a, 1977	10-16-78 6-13-79	103 118
12080010 Deschutes River	Do.....	Lat 47°00'42", long 122°54'07", in NW¼ Land Grant 60, T.18 N., R.2 W., Thurston County, at "E" Avenue Bridge in Tumwater, 0.2 mi (0.3 km) upstream from Capitol Boulevard and at mile 2.6 (3.9 km).	162	1971-72 1975, 1977-78	12- 6-78 2-27-79 4- 6-79 6-14-79 8- 8-79	324 1,020 266 120 82.5
Nisqually River basin						
12090240 Nisqually River	Puget Sound	Lat 47°04'18", long 122°42'11", in SE¼ sec.30, T.18 N., R.1 E., Pierce County, at bridge on Interstate 5, 1.0 mi (1.6 km) north of Nisqually at river mile 2.4 (3.9 km).	712	1960, 1962, 1971-73, 1976, 1978	10-13-78 2-14-79 4-12-79 6-20-79 8-10-79	1,120 2,520 1,930 1,140 1,100
Judd Creek basin						
12091700 Judd Creek	Quartermaster Harbor	Lat 47°24'40", long 122°28'18", in NE¼SW¼ sec.7, T.22 N., R.3 E., King County, at culvert at 216th Street S.W., 1.0 mi (1.6 km) upstream from mouth, and 1.5 mi (2.4 km) north of Burton.	4.41	1969-75‡, 1976-79a, 1976-78	10-20-78 4-11-79	1.65 2.63
Puyallup River basin						
12101110 White River	Puyallup River	Lat 47°12'15", long 122°14'10", in NW¼SW¼ sec.24, T.20 N., R.4 E., Pierce County, at Main Street bridge on northwest edge of Sumner, at mile 0.7 (1.1 km).	494	1972, 1977-78	10-13-78 12-12-78 2-16-79 4- 5-79 5-21-79 8-16-79	1,300 1,350 1,920 1,700 1,730 962
Snohomish River basin						
12137230 Sultan River	Skykomish River	Lat 47°58'47", long 121°34'25", in SE¼SW¼ sec.19, T.29 N., R.10 E., Snohomish County, at bridge, 0.4 mi (0.6 km) downstream from Elk Creek, 13.6 mi (21.9 km) northeast of Sultan, and at mile 22.4 (36.0 km).	---	1977-78	10- 4-78 11-22-78 2-28-79 3-27-79 6-11-79 7-26-79	83.6 110 158 171 321 73.5
12137290 South Fork Sultan River	Do.....	Lat 47°56'52", long 121°37'33", in NE¼NE¼ sec.3, T.28 N., R.9 E., Snohomish County, at bridge, 10.5 mi (16.9 km) northeast of Sultan, and at mile 2.3 (3.7 km).	---	1977-78	10- 4-78 11-22-78 2-28-78 3-27-78 6-11-79 7-27-79	36.5 50.5 68.2 71.9 126 28.8
12141100 Skykomish River	Snohomish River	Lat 47°51'08", long 121°57'29", in NE¼NE¼ sec.12, T.27 N., R.6 E., Snohomish County, at State Highway 203 bridge, at south city limits of Monroe.	834	1922g, 1951g, 1955, 1958-67g, 1959, 1967-74, 1975-78	10-12-78 12- 5-78 1-23-79 3-21-79 5-22-79 7-24-79	1,740 6,530 3,210 4,440 9,710 2,020
12145000 Tokul Creek	Snoqualmie River	Lat 47°33'13", long 121°50'09", in SE¼NW¼ sec.19, T.24 N., R.8 E., King County, 200 ft (61 m) upstream from fish hatchery diversion, 600 ft (183 m) downstream from State Highway 522, 1.8 mi (2.9 km) northeast of Snoqualmie.	32.2	1907-14‡, 1926, 1927, 1929-31‡, 1945, 1957, 1959-61a, 1962-78	1-24-79 4- 5-79 5-24-79 7-20-79	147 178 52.8 28.6
12146000 Patterson Creek	Do.....	Lat 47°34'52", long 121°56'23", in SW¼NE¼ sec.8, T.24 N., R.7 E., King County, on left bank 150 ft (46 m) upstream from private road bridge, 2.6 mi (4.2 km) northwest of Fall City, and at mile 1.9 (3.1 km).	15.5	1948-50‡, 1956-71‡, 1972-79a, 1978	10-30-78 12- 5-78 12- 8-78 2-22-79 4-24-79 6-15-79 9-19-79	10.7 87.4 48.3 37.0 19.3 9.80 7.59
12146500 Patterson Creek	Do.....	Lat 47°35'15", long 121°55'40", on line between sec.4 and 9, T.24 N., R.7 E., King County, at county bridge, 0.8 mi (1.3 km) upstream from mouth and 2 mi (3.2 km) northwest of Fall City. (Formerly published as 0.8 (1.3 km) mi above mouth near Fall City.	b19.9	1945‡, 1957, 1978	10-30-78 12- 5-78 12- 8-78 2-22-79 4-24-79 6-15-79 9-19-79	12.9 118 61.2 48.1 28.4 10.4 9.09
12147000 Griffin Creek	Do.....	Lat 47°36'58", long 121°54'15", in SW¼SW¼ sec.27, T.25 N., R.7 E., King County, on left bank 0.2 mi (0.3 km) upstream from bridge on State Highway 203, 2.3 mi (3.7 km) south of Carnation, and at mile 0.9 (1.4 km).	17.1	1946-70‡, 1972-79a, 1978	10-30-78 12- 5-78 12- 8-78 2-22-79 4-24-79 6-15-79 9-19-79	12.7 133 65.4 44.2 26.9 4.31 2.95

‡ Operated as continuous-record station.
a Operated as crest-stage gage.
b Approximately.
g Stage only.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft³s)
		Snohomish River basin--Continued				
12149500 Harris Creek	Snoqualmie River	Lat 47°40'42", long 121°54'22", in NE¼SE¼ sec.4, T.25 N., R.7 E., King County, at State Highway 203 bridge, 1.7 mi (2.8 km) upstream from mouth, and 1.8 mi (2.9 km) north of Carnation. (Formerly published as "near Tolt.")	b8.39	1945‡, 1957-58 1973, 1978	10-30-78 12- 5-78 12- 8-78 2-22-79 4-24-79 6-15-79 9-19-79	6.44 55.8 31.2 25.6 15.1 3.66 2.29
12155400 Pilchuck River	Snohomish River	Lat 47°54'47", long 122°04'56", in NW¼SE¼ sec.18, T.28 N., R.6 E., Snohomish County, at bridge on U.S. Highway No. 2, at east city limits of Snohomish, at mile 1.9 (3.1 km).	132	1971-74, 1978	10-10-78 11-22-78 1-22-79 3-21-79 5-22-79 7-24-79	155 391 724 341 201 76.8
		Stillaguamish River basin				
12164510 South Fork Stillaguamish River	Stillaguamish River	Lat 48°12'03", long 122°07'04", in NE¼SE¼ sec.2, T.31 N., R.5 E., Snohomish County, at State Highway 530 bridge near northeast corner of Arlington, 0.4 mi (0.6 km) upstream from the confluence with the North Fork Stillaguamish, at mile 18.2 (29.3 km).	255	1966, 1973-75 1978	10-20-78 3-13-79 5- 9-79 8-20-79 9-18-79	359 1,840 1,750 245 276
12167700 Stillaguamish River	Port Susan	Lat 48°11'48", long 122°12'33", in SW¼SE¼ sec.6, T.31 N., R.5 E., Snohomish County, at U.S. Highway I-5, 1.5 mi (2.4 km) east of Silvana, 6.7 mi (10.8 km) downstream from confluence of North and South Forks of Stillaguamish River, and at mile 11.1 (17.9 km).	557	1975‡, 1976-78	10-19-78 2- 8-79 5-16-79 7-11-79 9-17-79	820 4,190 3,790 2,570 680
		Skagit River basin				
12189400 Sauk River tributary	Sauk River	Lat 48°20'30", long 121°33'00", in SE¼ sec.18, T.33 N., R.10 E., Skagit County, at Darrington-Concrete road, 6.5 mi (10.5 km) northeast of Darrington.	1.30	1951-70a, 1978-79a	2-14-79	20.1
		Samish River basin				
12201500 Samish River	Samish Bay	Lat 48°32'44", long 122°20'19", in SE¼SE¼ sec.6, T.35 N., R.4 E., Skagit County, 500 ft (152 m) downstream from bridge on U.S. Highway 99, 0.5 mi (0.8 km) downstream from Friday Creek, 5.0 mi (8.0 km) north of Burlington, and at mile 10.3 (16.6 km).	87.8	1944-71‡, 1972-79a, 1972-74, 1976-78	12-14-78 2-23-79 5-16-79 8-28-79	273 310 99.5 21.5
		Minor basins between Samish and Nooksack Rivers				
Chuckanut Creek	Chuckanut Bay	Lat 48°42'07", 122°29'15", in NE¼NE¼ sec.13, T.37 N., R.2 E., Whatcom County, at Chuckanut Drive road crossing, 0.3 mi (0.5 km) upstream from mouth, at Chuckanut Village.	6.91	1948-49, 1954-55, 1959 1967, 1969-70	9-25-79	0.29
		Nooksack River basin				
Ruth Creek	North Fork Nooksack River	Lat 48°53'41", long 121°39'41", in SW¼SW¼ sec.4, T.39 N., R.9 E., Whatcom County, Mt. Baker National Forest, at road crossing, 0.1 mi (0.2 km) upstream from mouth, 13 mi (20.9 km) east of Glacier.	12.7	---	6-27-79 9-26-79	149 29.6
Bagley Creek	Do.....	Lat 48°52'39", long 121°40'12", in SW¼SW¼ sec.8, T.39 N., R.9 E., Whatcom County, Mt. Baker National Forest, at road crossing, 0.2 mi (0.3 km) upstream from confluence of Galena Creek, 12 mi (19.3 km) east of Glacier.	5.56	---	9-26-79	7.20
North Fork Nooksack River	Nooksack River	Lat 49°54'21", long 121°41'33", in SW¼SW¼ sec.31, T.39 N., R.9 E., Whatcom County, Mt. Baker National Forest, at Mt. Baker Highway crossing, 11 mi (17.7 km) east of Glacier.	---	---	9-26-79	206
Swamp Creek	North Fork Nooksack River	Lat 48°54'19", long 121°41'14", in SE¼SW¼ sec.31, T.40 N., R.9 E., Whatcom County, Mt. Baker National Forest, at road crossing, 50 ft (15.2 m) upstream from mouth, 11.5 mi (18.5 km) east of Glacier.	---	---	6-27-79 9-26-79	77.2 9.41
Deadhorse Creek	Do.....	Lat 48°54'09", long 121°50'04", in NW¼NE¼ sec.1, T.39 N., R.7 E., Whatcom County, Mt. Baker National Forest, 60 ft (18.3 m) upstream from mouth, 4.5 mi (7.2 km) east of Glacier.	---	---	6-27-79 9-26-79	42.6 6.04
Thompson Creek	Glacier Creek	Lat 48°52'47", long 121°54'37", in NW¼SW¼ sec.9, T.39 N., R.7 E., Whatcom County, Mt. Baker National Forest, at road crossing, 0.3 mi (0.5 km) upstream from mouth, 1.2 mi (1.9 km) south-east of Glacier.	---	---	6-27-79 9-25-79	18.2 2.94

‡ Operated as continuous-record station.

a Operated as crest-stage gage.

b Approximately.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
Nooksack River basin--Continued						
Glacier Creek	North Fork Nooksack River	Lat 48°53'17", long 121°56'26", in NW¼NE¼ sec.7, T.39 N., R.7 E., Whatcom County, Mt. Baker National Forest, at Mt. Baker Highway at Glacier.	31.8	1911, 1920-21, 1954	9-25-79	179
Canyon Creek	Do.....	Lat 48°54'52", long 121°59'29", in SE¼NW¼ sec.35, T.40 N., R.6 E., Whatcom County, at mouth, 2.5 mi (4.0 km) northwest of Glacier.	31.1	1948, 1954	9-25-79	25.4
Boulder Creek	Do.....	Lat 48°55'41", long 122°01'45", in SW¼NE¼ sec.28, T.40 N., R.6 E., Whatcom County, at Mt. Baker Highway crossing, 4.5 mi (7.2 km) northwest of Glacier, 2 mi (3.2 km) east of Maple Falls.	7.24	1948, 1954	6-26-79 9-25-79	11.6 4.40
Maple Creek	Do.....	Lat 48°55'28", long 122°04'21", in SW¼SE¼ sec.30, T.40 N., R.6 E., Whatcom County, at Mt. Baker Highway, at Maple Falls.	10.2	1948, 1954	6-26-79 9-25-79	2.37 0
12206500 Kendell Creek	Do.....	Lat 48°54'20", long 122°08'20", in NW¼NE¼ sec.3, T.39 N., R.5 E., Whatcom County, at Mt. Baker Highway, 9.0 mi (14.5 km) west of Glacier.	29.2	1954‡, 1955-56, 1958-59	6-26-79 9-25-79	2,53 0
Racehorse Creek	Do.....	Lat 48°53'17", long 122°07'59", in NW¼NW¼ sec.10, T.39 N., R.5 E., Whatcom County, at county road crossing, 0.8 mi (1.3 km) upstream from mouth, 2.1 mi (3.4 km) south of Kendall.	10.8	---	6-27-79 9-25-79	17.7 4.49
Clearwater Creek	Do.....	Lat 48°46'30", long 122°02'36", in NW¼NW¼ sec.21, T.38 N., R.6 E., Whatcom County, at county bridge, 6.5 mi (10.5 km) southeast by east of Van Zandt.	21.1	1954, 1955	9-26-79	17.4
12208000 Middle Fork Nooksack River	Do.....	Lat 48246'43", long 122°06'20", in SW¼NW¼ sec.13, T.38 N., R.5 E., Whatcom County, at county bridge, 3.5 mi (5.6 km) east of Van Zandt and at mile 5.6 (9.0 km).	75.4	1911g, 1920-21‡, 1911, 1920, 1955, 1959 1973	6-27-79 9-26-79	357 131
South Fork Nooksack River	Nooksack River	Lat 48°35'40", long 122°55'16", in SE¼SE¼ sec.17, T.36 N., R.7 E., Whatcom County, at private road crossing, 6.5 mi (10.5 km) northeast by north of Hamilton and at mile 29.9 (48.1 km).	44	---	6-26-79 9-25-79	330 69.2
12209000 South Fork Nooksack River	Do.......	Lat 48°39'52", long 122°09'56", in lot 2, SW¼SW¼ sec.26, T.37 N., R.5 E., Whatcom County, on left bank 0.5 mi (0.8 km) upstream from Skookum Creek, 3.7 mi (6.0 km) east of Wickersham,and at mile 14.8 (23.8 km).	103	1934-78‡, 1979a,	10- 4-78 12- 5-78 6-26-79 9-25-79	277 450 398 100
12209500 Skookum Creek	South Fork Nooksack River	Lat 48°40'20", long 122°08'25", in NE¼NE¼ sec.27, T.37 N., R.5 E., Whatcom County, at private road crossing, 500 ft (152 m) upstream from mouth, and 3.5 mi (5.6 km) northeast of Wickersham.	23.1	1911, 1948-69‡	6-26-79 9-25-79	44.6 10.2
South Fork Nooksack River	Nooksack River	Lat 48°47'16", long 122°11'57", in NW¼NW¼ sec.17, T.38 N., R.5 E., Whatcom County, at county bridge, 0.5 mi (0.8 km) west of Van Zandt.	---	---	6-27-79 9-26-79	574 140
McCauley Creek	Smith Creek	Lat 48°50'24", long 122°15'21", in SE¼NW¼ sec.26, T.39 N., R.4 E., Whatcom County, at Mt. Baker Highway road crossing, 2.1 mi (3.4 km) east of Deming.	3.60	1954-55	6-27-79 9-26-79	.73 0
Smith Creek	Nooksack River	Lat 48°51'00", long 122°17'15", in SW¼SW¼ sec.22, T.39 N., R.4 E., Whatcom County, at county road crossing, 0.5 mi (0.8 km) north of North Cedarville.	9.94	1948-49 1954-55	6-27-79 9-26-79	0 0
12211000 Anderson Creek	Do.....	Lat 48°51'20", long 122°20'20", in NW¼SE¼ sec.19, T.39 N., R.4 E., Whatcom County, at Goshen Road crossing at Goshen, 2.2 mi (3.5 km) northwest of Cedarville.	12.9	1948, 1954‡, 1948-49, 1954-56, 1958-59	6-27-79 9-26-79	.76 .38
Kamm Ditch (formerly Stickney Slough)	Do.....	Lat 48°56'18", long 122°26'20", in SE¼SE¼ sec.20, T.40 N., R.3 E., Whatcom County, at Hannegan Road, and 500 ft (152 m) above mouth, 1.0 mi (1.6 km) east of Lynden.	8.01	1954	6-27-79 9-26-79	4.13 4.36
Scott Ditch	Do.....	Lat 48°55'16", long 122°26'42", in SW corner, sec. 28, T.40 N., R.3 E., Whatcom County, at Hannegan Road, 1.5 mi (2.4 km) south of Lynden.	7.27	1948-49, 1954-55	6-27-79 8-26-79	3.74 1.99

‡ Operated as continuous-record station.
a Operated as crest-stage gage.
g Obtained fragmentary gage-height record.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		Nooksack River basin--Continued				
12212000 Fishtrap Creek	Nooksack River	Lat 48°57'52", long 122°25'50", on north line sec.16, T.40 N., R.3 E., Whatcom County, at bridge on State Highway Route 546, 1.7 mi (2.7 km) north of Lynden and at mile 6.9 (11.1 km).	h22.3	1948-71‡, 1973	6-27-79 9-26-79	5.41 3.19
Fishtrap Creek	Do.....	Lat 48°54'50", long 122°31'10", in NE¼SW¼ sec.35, T.40 N., R.2 E., Whatcom County, at mouth, 3.3 mi (5.3 km) southwest of Lynden.	j36.8	1954	6-27-79 9-26-79	11.1 8.38
Bertrand Creek	Do.....	Lat 48°59'38", long 122°30'30", in SE¼SE¼ sec.35, T.41 N., R.2 E., Whatcom County, at "H" Street Road crossing, 3.6 mi (5.8 km) northwest of Lynden.	---	---	6-27-79 9-26-79	1.71 1.41
12212500 Bertrand Creek	Do.....	Lat 48°55'30", long 122°31'50", in NE¼SE¼ sec.27, T.40 N., R.2 E., Whatcom County, 3.4 mi (5.5 km) west of Lynden.	k37.4	1948‡, 1954‡, 1948-49, 1951, 1955-56, 1958-59, 1967	6-27-79 9-26-79	5.98 7.84
Wiser Lake Creek	Do.....	Lat 48°53'24", long 122°32'18", west line SE¼ sec. 3, T.39 N., R.2 E., Whatcom County, at Wiser Lake Road, 0.5 mi (0.8 km) above mouth, 4.9 m (7.9 km) southwest of Lynden.	6.27	1942, 1943, 1949, 1954-56, 1958-59	6-27-79 9-26-79	.68 1.81
12212900 Tenmile Creek	Do.....	Lat 48°51'49", long 122°29'45", in SE¼SW¼ sec.13, T.39 N., R.2 E., Whatcom County, on left bank on downstream side of county road bridge, 0.6 mi (1.0 km) downstream from Fourmile Creek, 0.6 mi (1.0 km) northwest of Laurel, and at mile 5.8 (9.3 km).	23.6	1968-72‡	6-28-79 9-25-79	4.38 5.01
Deer Creek	Barrett Lake	Lat 48°50'44", long 122°33'26", west line NW¼NE¼ sec.28, T.39 N., R.2 E., Whatcom County, at Axton Road, 0.6 mi (1.0 km) southeast of Ferndale.	6.53	1943, 1948-49, 1954-56, 1958-59, 1967	6-28-79 9-25-79	0 0
Barrett Lake outlet	Nooksack River	Lat 48°51'12", long 122°34'18", west line SW¼ sec. 21, T.39 N., R.2 E., Whatcom County, at Paradise Road, 0.25 mi (0.4 km) upstream from mouth, 1 mi (1.6 km) east of Ferndale.	34.1	1954	6-28-79 9-25-79	4.23 7.03
Silver Creek	Do.....	Lat 48°31'26", long 122°33'44", in SE¼NW¼ sec.4, T.38 N., R.2 E., Whatcom County, at railroad crossing 3 mi (4.8 km) southeast of Ferndale.	7.60	1948-49 1954	6-28-79 9-25-79	0 0
		Minor basins north of Nooksack River				
Terrell Creek	Birch Bay	Lat 48°53'06", long 122°41'40", north line SW¼, sec.9, T.39 N., R.1 E., Whatcom County, at Brown Road, 7 mi (11.3 km) southeast of Blaine.	5.99	1943, 1954	6-26-79 9-25-75	e0.03 0
Do.....	Do.....	Lat 48°53'49", long 122°44'51", west line SW¼, sec.6, T.39 N., R.1 E., Whatcom County, at Jackson Road, 1.5 mi (2.4 km) south of Birch Bay.	12.5	1948, 1954	6-26-79 9-25-79	0 0
12213500 California Creek	Drayton Harbor	Lat 48°55'18", long 122°39'32", near southeast corner, sec.27, T.40 N., R.1 E., Whatcom County, at Porter Road, near Custer.	11.0	1942-43, 1954-55‡, 1954, 1958	6-26-79 9-25-79	0 0
California Creek	Do.....	Lat 48°56'08", long 122°41'15", north line NE¼ sec.28, T.40 N., R.1 E., Whatcom County, at Birch Bay-Lynden Road, 2.5 mi (4.0 km) northwest of Custer.	18.2	1948-49 1954	6-26-79 9-25-79	.91 .92
North Fork Dakota Creek	Dakota Creek	Lat 48°57'04", long 122°38'12", west line SW¼SW¼ sec.13, T.40 N., R.1 E., Whatcom County, at Custer School Road, 2.2 mi (3.5 km) north of Custer.	m7.92	1948-49 1954-56 1958-59 1967	6-27-79 9-26-79	1.30 .88
South Fork Dakota Creek	Do.....	Lat 48°57'01", long 122°38'12", near southwest corner sec.14, T.40 N., R.1 E., Whatcom County, at Custer School Road, 2.3 mi (3.7 km) north of Custer.	8.25	1948-49 1954	6-27-79 9-26-79	.68 .64
12214000 Dakota Creek	Drayton Harbor	Lat 48°57'25", long 122°39'30", in NW¼SW¼ sec.14, T.40 N., R.1 E., Whatcom County, at Behme Road, 4.2 mi (6.8 km) southeast of Blaine.	m18.4	1948-53‡, 1954-55‡, 1954-56, 1958-59, 1967, 1973	6-27-79 9-26-79	2.76 1.11

‡ Operated as continuous-record station.
h Includes 17.4 mi^2 in Canada.
j Includes 21.6 mi^2 in Canada.
k Includes 22.1 mi^2 in Canada.
m Includes 0.41 mi^2 in Canada.
e Estimate.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^{3}s)
		Minor basins north of Nooksack River--Continued				
Unnamed tributary	Dakota Creek	Lat 48°51'56", long 122°39'31", in SE¼SE¼ sec.10, T.40 N., R.1 E., Whatcom County, at Haynie Road, 4 mi (6.4 km) southeast of Blaine.	1.75	1948, 1954	6-27-79 9-26-79	0.24 .19
Do.....	Do.....	Lat 48°58'13", long 122°41'28", in NW¼SE¼ sec.9, T.40 N., R.1 E., Whatcom County, at road crossing 2.5 mi (4.0 km) southeast of Blaine.	1.66	1948, 1954	6-27-79 9-26-79	.65 .68
Do.....	Do.....	Lat 48°58'19", long 122°41'58", in NW¼SW¼ sec.9, T.40 N., R.1 E., Whatcom County, at Hoier Road near mouth, 2 mi (3.2 km) southeast of Blaine.	1.22	1948, 1954	6-27-79 9-26-79	.35 .43
Do.....	Do.....	Lat 48°58'45", long 122°42'26", in NE¼NE¼ sec.8, T.40 N., R.1 E., Whatcom County, at Blaine-Lynden Road, 1.7 mi (2.7 km) southeast of Blaine.	1.63	1948, 1954	6-27-79 9-26-79	e.03 e.02
		Fraser River basin				
Dale Creek	Sumas River	Lat 48°52'58", long 122°17'50", near southwest corner SE¼ sec.4, T.39 N., R.4 E., Whatcom County, at private road crossing, 2.7 mi (4.3 km) southeast of Nooksack.	1.45	1947-48, 1954-55, 1959	6-27-79 9-25-79	.21 .12
Goodwin Ditch	Do.....	Lat 48°54'42", long 122°18'10", east line NW¼SW¼, sec.33, T.40 N., R.4 E., Whatcom County, at Ost Coles Road, 1.4 mi (2.3 km) southeast of Nooksack.	3.05	1947-49, 1954-56, 1959	6-27-79 9-25-79	3.10 4.53
Sumas River	Vedder River	Lat 48°55'14", long 122°18'45", north line NE¼NE¼ sec.32, T.40 N., R.4 E., Whatcom County, at road crossing, 0.5 mi (0.8 km) southeast of Nooksack.	15.4	1948-49, 1954-56, 1958, 1959	6-27-79 9-25-79	7.47 7.16
Breckenridge Creek	Sumas River	Lat 48°56'02", long 122°17'13", east line NE¼ sec.28, T.40 N., R.4 E., Whatcom County, at road crossing 1.5 mi (2.4 km) northeast of Nooksack.	5.27	1947-49, 1954-56, 1958-59	6-26-79 9-25-79	.93 .32
12214500 Sumas River	Vedder River	Lat 48°58'39", long 122°15'10", in NE¼NW¼ sec.11, T.40 N., R.4 E., Whatcom County, at Clearbrook Road, 1.5 mi (2.4 km) south of Sumas.	30.8	1948-50‡, 1954-55‡, 1951, 1954-56, 1958-59, 1967	6-26-79 9-25-79	11.0 9.94
Johnson Creek	Sumas River	Lat 48°57'51", long 122°19'34", north line NW¼NW¼ sec.17, T.40 N., R.4 E., Whatcom County, at Lynden-Sumas Highway, 1 mi (1.6 km) south of Clearbrook.	5.88	1947, 1948, 1954	6-26-79 9-25-79	e0 e0
Squaw Creek	Johnson Creek	Lat 48°58'06", long 122°19'48", east line SE¼ sec.7, T.40 N., R.4 E., Whatcom County, at Van Buren Road, 1 mi (1.6 km) southwest of Clearbrook.	3.77	1947, 1954, 1955	6-26-79 9-25-79	e0 e0
Pangborn Lake Creek	Do.....	Lat 48°58'45", long 122°19'30", in SW¼SW¼ sec.5, T.40 N., R.4 E., Whatcom County, at Clearbrook Road, 0.25 mi (0.4 km) upstream from mouth, 3.0 mi (4.8 km) southwest of Sumas.	3.03	1947-48, 1954-56, 1958-59	6-26-79	1.56
12215000 Johnson Creek	Sumas River	Lat 48°59'50", long 122°15'40", in NE¼SW¼ sec.34, T.41 N., R.4 E., Whatcom County, at Sumas.	n25.3	1954-55‡, 1948-49, 1954-56, 1958-59	6-26-79 9-25-79	11.2 12.8
12215500 Saar Creek	Do.....	Lat 49°00'01", long 122°11'50", in E½ sec.31, T.41 N., R.5 E., Whatcom County, at Jones Road, 3 mi (4.8 km) east of Sumas.	10.3	1948‡, 1949	6-26-79 9-25-79	1.27 .24
		Minor basins between Klickitat and White Salmon Rivers				
Major Creek	Columbia River	Lat 45°42'54", long 121°21'03", in NW¼SE¼ sec.30, T.3 N., R.12 E., Klickitat County, at State Route 14 road crossing, 0.4 mi (0.6 km) upstream from mouth and 5.5 mi (8.8 km) east of Bingen.	30.8	1977-78	6-12-79 9-27-79	0 0
		White Salmon River basin				
Cascades Creek	White Salmon River	Lat 46°06'20", long 121°36'14", in SE¼SW¼ sec.7, T.7 N., R.10 E., Skamania County, Gifford Pinchot National Forest, at logging road (N712) crossing, 0.2 mi (0.3 km) upstream from mouth and 8.2 mi (13.2 km) northwest of Trout Lake.	16.4	1977-78	10-16-78 6-13-79 9-27-79	43.2 86.0 35.4
White Salmon River	Columbia River	Lat 46°01'00", long 121°31'30", in SW¼SW¼ sec.11, T.6 N., R.10 E., Klickitat County, 200 ft (61 m) upstream from N 80 road crossing, 1.3 mi (2.1 km) northeast of Trout Lake.	65.4	1977	10-16-78 6-13-79 7-25-79 9-27-79	144 195 131 107

‡ Operated as continuous-record station.

n Includes 6.2 mi^2 in Canada.

e Estimate.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft³/s)
		White Salmon River basin--Continued				
Gotchen Creek	White Salmon River	Lat 46°01'44", long 121°31'21", in NE¼NW¼ sec.11, T.6 N., R.10 E., Klickitat County, at road crossing 2.2 mi (3.5 km) northeast of Trout Lake.	18.2	1977-78	10-16-78	0
14121500 Trout Lake Creek	Do.....	Lat 46°00'15", long 121°32'18", in SE¼SW¼ sec.15, T.6 N., R.10 E., Klickitat County, 150 ft (46 m) upstream from road crossing, 2.0 mi (3.2 km) upstream from mouth, 0.6 mi (1.0 km) northwest of Trout Lake.	69.3	1909-12‡, 1913, 1959-60‡, 1973, 1977-78	10-16-78 6-13-79	37.4 137
Gilmer Creek	Do.....	Lat 45°51'30", long 121°30'12", in SW¼SW¼ sec.1, T.4 N., R.10 E., Klickitat County, at old road crossing 0.6 mi (1.0 km) northeast of B-Z corner.	11.6	1909, 1977-78	10-16-78 6-13-79 9-27-79	.81 .31 .04
Rattlesnake Creek	Do.....	Lat 45°47'50", long 121°29'02", in NW¼SW¼ sec.31, T.4 N., R.11 E., Klickitat County, 50 ft (15 m) upstream from mouth at Husum.	55.7	1911, 1913, 1973, 1977-78	10-17-78 6-13-79	2.13 2.39
Buck Creek	Do.....	Lat 45°46'53", long 121°30'54", in NW¼NE¼ sec.2, T.3 N., R.10 E., Skamania County, 10 ft (30 m) upstream from mouth, 1.8 mi (2.9 km) southwest of Husum.	13.9	1913, 1973, 1977-78	10-17-78 6-13-79	3.97 6.15
		Little White Salmon River basin				
Little White Salmon River	Columbia River	Lat 45°50'43", long 121°39'30", in NE¼SW¼ sec.10, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, at N443 crossing, 4.7 mi (7.6 km) northwest of Willard.	27.9	1977-78	10-17-78 6-13-79 9-27-79	8.52 21.7 8.05
14124000 Little White Salmon River	Do.....	Lat 45°47'56", long 121°38'20", in SE¼SW¼ sec.26, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, 100 ft (30 m) upstream from Moss Creek, 1.3 mi (2.1 km) northwest of Willard.	39.2	1910, 1941-42, 1944-49‡, 1973, 1977-78	10-17-78 6-13-79	11.5 31.0
Moss Creek	Little White Salmon River	Lat 45°47'54", long 121°38'19", in SE¼SW¼ sec.26, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, 50 ft (15 m) upstream from mouth, 1.3 mi (2.1 km) northwest of Willard.	1.05	1941, 1973, 1977	10-17-78 6-13-79	16.4 130
Lava Creek	Do.....	Lat 45°46'56", long 121°37'44", in SE¼SE¼ sec.35, T.4 N., R.9 E., Skamania County, Gifford Pinchot National Forest, at county road, 0.2 mi (0.3 km) upstream from mouth at Willard.	72.5b	1910. 1928-31, 1946, 1973, 1977-78	10-17-78 6-13-79	1.37 92.6
		Wind River basin				
Falls Creek	Wind River	Lat 45°54'24", long 121°56'15", in SE¼SE¼ sec.20, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 0.6 mi (1.0 km) upstream from mouth, 7 mi (11.3 km) northwest of Stabler.	---	1977-78	6-12-79	43.7
Wind River	Columbia River	Lat 45°52'56", long 121°58'00", in NE¼NE¼ sec.31, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, at Siouxon Road crossing (N 73) 1.5 mi (2.4 km) east of Government Mineral Springs, 5.7 mi (9.2 km) northwest of Stabler and at river mile 19.6 (31.5 km).	63.3	1977-78	6-12-79 7-24-79 9-26-79	91.4 32.9 14.8
Trapper Creek	Wind River	Lat 45°52'47", long 121°58'50", in SE¼NE¼ sec.31, T.5 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 100 ft (30 m) upstream from N 511 road bridge, and 5.9 mi (9.5 km) northwest of Stabler.	11.6	1977-78	6-12-79	15.6
14127000 Wind River	Columbia River	Lat 45°48'31", long 121°54'27", in NW¼SE¼ sec.26, T.4 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 100 ft (30.5 m) downstream from county road bridge, 0.7 mi (1.1 km) upstream from Trout Creek, 7.1 mi (11.4 km) northwest of Carson, and at mile 11.5 (18.5 km).	108	1945-69‡ 1977-78	6-12-79 7-24-79 9-27-79	210 100 71.7
Trout Creek	Wind River	Lat 45°48'00", long 121°54'51", in NE¼SW¼ sec.26, T.4 N., R.7 E., Skamania County, Gifford Pinchot National Forest, at county road, 0.2 mi (0.3 km) upstream from Martha Creek, 7.0 mi (11.3 km) northwest of Carson.	30.3	1944-48‡, 1973, 1977-78	10-17-78 6-13-79	13.4 42.5

‡ Operated as continuous-record station.

b Approximately.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		Wind River basin--Continued				
14128000 Panther Creek	Wind River	Lat 45°48'02", long 121°51'59", in SW¼SE¼ sec.25, T.4 N., R.7 E., Skamania County, Gifford Pinchot National Forest, 2,000 ft (61.0 m) upstream from Cedar Creek, 5.9 mi (9.5 km) northwest of Carson.	30.1	1944-54‡, 1973, 1977-78	10-17-78 6-13-79	48.6 78.8
Panther Creek	Do.....	Lat 45°46'17", long 121°50'51", in NE¼SW¼ sec.6, T.3 N., R.8 E., Skamania County, Gifford Pinchot National Forest, at county road crossing, 1.3 mi (2.1 km) upstream from mouth and 3.7 mi (6.0 km) northwest of Carson.	39.6	1977-78	10-17-78 6-12-79 9-26-79	54.8 77.1 50.9
Bear Creek	Do.....	Lat 45°45'58", long 121°49'20", in NW¼NE¼ sec.8, T.3 N., R.8 E., Skamania County, Gifford Pinchot National Forest, 0.5 mi (0.8 km) upstream from mouth and 3.0 mi (4.8 km) northwest of Carson.	14.7	1977-78	10-17-78 6-12-79 9-26-79	3.20 6.60 1.67
14128500 Wind River	Columbia River	Lat 45°44'10", long 121°48'12", in SW¼NE¼ sec.21, T.3 N., R.8 E., Skamania County, 0.8 mi (1.3 km) upstream from Little Wind River 1.0 mi (1.6 km) northeast of Carson, and 1.9 mi (3.1 km) upstream from mouth. Records include flow of Little Wind River.	225	1934-77‡, 1978-79a	5- 9-79	1,380
		Minor basins between Wind and Washougal Rivers				
Rock Creek	Columbia River	Lat 45°41'44", long 121°53'30", in SE¼SW¼ sec.36, T.3 N., R.7 E., Skamania County, at mouth at Stevenson.	41.0	1977-78	10-17-78 6-13-79 9-26-79	14.2 29.5 8.50
Hamilton Creek	Do.....	Lat 45°39'13", long 121°59'16", in SW¼SE¼ sec.18, T.2 N., R.7 E., Skamania County, at road crossing, 2.3 mi (3.7 km) west of North Bonneville.	11.8	1952, 1977-78	10-17-78 6-12-79	4.29 9.36
Greenleaf Creek	Hamilton Creek	Lat 45°39'20", long 121°57'23", in N½ sec.39, T.2 N., R.7 E., Skamania County, 200 ft (61.0 m) downstream from bridge, 0.3 mi (0.5 m) upstream from mouth and 1.2 mi (1.9 km) northwest of North Bonneville.	5.87	1952-53, 1977-78	10-17-78 6-12-79	2.47 6.38
Woodward Creek	Columbia River	Lat 45°37'18", long 122°01'45", in NW¼NE¼ sec.35, T.2 N., R.6 E., Skamania County, at State Highway 14 crossing, 1.1 mi (1.8 km) northeast of town of Skamania.	8.08	1952-53, 1977-78	6-12-79	9.76
Duncan Creek	Do.....	Lat 45°36'50", long 122°03'14", in NE¼SW¼ sec.34, T.2 N., R.6 E., Skamania County, at State Highway 14 crossing and at Skamania.	4.28	1952, 1977-78	6-12-79	1.63
Lawton Creek	Do.....	Lat 45°33'44", long 122°15'55", in NW¼NW¼ sec.24, T.1 N., R.4 E., Clark County, at State Highway 14 crossing and 8.2 mi (13.2 km) east of Central School, Camas.	4.89	1952-53, 1977-78	6-12-79	2.90
Gibbons Creek	Do.....	Lat 45°34'48", long 122°18'33", in NE¼ sec.49, T.1 N., R.4 E., Clark County, at road crossing 0.4 mi (0.6 km) upstream from confluence with Campen Creek, 1 mi (1.6 km) upstream from mouth and 4.6 mi (7.4 km) east of Central School in Camas.	5.20	1951, 1977-78	6-12-79	4.09
Campen Creek	Gibbons Creek	Lat 45°34'40", long 122°18'50", in N½ sec.49, T.1 N., R.4 E., Clark County, at road crossing 200 ft (61 m) upstream from mouth and 4.4 mi (7.1 km) east of Central School in Camas.	2.00	1951, 1977-78	6-12-79	.79
		Washougal River basin				
Washougal River	Columbia River	Lat 45°41'36", long 122°07'25", in NW¼NW¼ sec.6, T.2 N., R.6 E., Skamania County, 800 ft (244 m) upstream from Stebbins Creek, 13.5 mi (21.7 km) northeast of Washougal.	30.3	1973, 1977-78	10-16-78 6-13-79	23.4 35.8
Stebbins Creek	Washougal River	Lat 45°41'29", long 122°07'16", in NW¼NW¼ sec.6, T.2 N., R.6 E., Skamania County, 200 ft (61 m) upstream from road crossing, 300 ft (91 m) upstream from mouth and 13.5 mi (21.7 km) northeast of Washougal.	8.31	1973, 1977-78	10-16-78 6-13-79	7.15 7.76
Dougan Creek	Do.....	Lat 45°40'28", long 122°09'16", in SW¼NE¼ sec.11, T.2 N., R.5 E., Skamania County, 500 ft (152 m) upstream from mouth and 11.5 mi (18.5 km) northeast of Washougal.	5.54	1953, 1961, 1977-78	10-16-78 6-13-79	4.03 3.42

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
Washougal River basin--Continued						
Washougal River	Columbia River	Lat 45°36'58", long 122°12'00", in SE¼SW¼ sec.33, T.2 N., R.5 E., Skamania County, at county road crossing, 0.9 mi (1.4 km) upstream from confluence with West Fork Washougal River and 4.0 mi (6.4 km) northwest of Prindle.	62.7	1977-78	10-18-78 6-14-79 7-25-79 9-26-79	54.8 79.0 57.2 40.1
West Fork Washougal River	Washougal River	Lat 45°41'03", long 122°14'28", in NE¼SW¼ sec.6, T.2 N., R.5 E., Skamania County, 50 ft (15.2 m) upstream from confluence of Hagen Creek and 8.0 mi (12.9 km) northwest of Prindle.	8.16	1977-78	10-18-78 6-12-79 7-25-79 9-25-79	9.70 13.6 14.3 7.59
Hagen Creek	West Fork Washougal River	Lat 45°41'03", long 122°14'30", in NE¼SW¼ sec.6, T.2 N., R.5 E., Skamania County, 80 ft (24.4 m) upstream from mouth and 8.0 mi (12.9 km) northwest of Prindle.	5.59	1977-78	10-18-78 6-12-79 9-25-79	7.50 11.5 6.11
Wildboy Creek	Do.....	Lat 45°38'58", long 122°12'50", in NW¼NE¼ sec.20, T.2 N., R.5 E., Skamania County, 100 ft (30 m) upstream from mouth, 5.2 mi (8.4 km) northwest of Prindle.	7.80	1953, 1977-78	10-18-78 6-12-79 9-26-79	6.39 9.80 3.53
14143000 West Fork Washougal River	Washougal River	Lat 45°36'58", long 122°13'06", in SE¼SW¼ sec.32, T.2 N., R.5 E., Skamania County, 200 ft (61 m) downstream from county road bridge, 1,000 ft (305 m) upstream from mouth, 7 mi (11.3 km) northeast of Washougal.	29.4	1951‡, 1952-54, 1961, 1977-78	10-16-78 6-12-79	30.8 49.1
Canyon Creek	Do.....	Lat 45°36'17", long 122°13'38", in NE¼NE¼ sec.6, T.1 N., R.5 E., Skamania County, 200 ft (61 m) upstream from State Highway 140 crossing, 3.6 mi (5.8 km) northeast of Prindle.	4.83	1951, 1977-78	10-16-78 6-12-79	3.14 3.93
Cougar Creek	Do.....	Lat 45°37'33", long 122°18'20", in NW¼SW¼ sec.27, T.2 N., R.4 E., Clark County, at State Highway 140 crossing, 3.5 mi (5.6 km) northeast of Washougal.	5.16	1951, 1961, 1977-78	10-16-78 6-12-79	2.91 3.33
Boulder Creek	Little Washougal River	Lat 45°40'40", long 122°19'29", in NE¼NW¼ sec.9, T.2 N., R.4 E., Clark County, at Fessenden Lessard Road crossing, and 6.9 mi (11.1 km) northeast of Washougal.	4.52	1977-78	10-17-78 6-12-79 9-26-79	2.36 5.20 1.29
Little Washougal River	Washougal River	Lat 45°39'06", long 122°20'50", in SW¼SW¼ sec.17, T.2 N., R.4 E., Clark County, at old logging road crossing, 4.9 mi (7.9 km) north of Washougal.	15.8	1951, 1961, 1977-78	10-17-78 6-12-79	8.65 14.9
14144000 Little Washougal River	Do.....	Lat 45°36'51", long 122°21'26", in NW¼SE¼ sec.31, T.2 N., R.4 E., Clark County, 1.1 mi (1.8 km) upstream from mouth, and 1.8 mi (2.9 km) north of Washougal.	23.8	1951-56‡, 1956-68a, 1977-78	10-17-78 6-12-79	11.1 19.8
Matney Creek	Lacamas Creek	Lat 45°40'18", long 122°26'19", in NW¼SE¼ sec.9, T.2 N., R.3 E., Clark County, 40 ft (12.2 m) upstream from county road crossing 0.2 mi (0.3 km) upstream from mouth, and 6.0 mi (9.7 km) northwest of Camas.	6.44	1951, 1977-78	10-17-78 6-13-79	.91 2.03
14144500 Lacamas Creek	Washougal River	Lat 45°40'19", long 121°29'13", in SW¼ sec.7, T.2 N., R.3 E., Clark County, 50 ft (15 m) above State Highway 500 bridge at Proebstel.	22.1	1942, 1943, 1951‡, 1961, 1967, 1977-78	10-17-78 6-14-79	6.13 8.79
Fifth Plain Creek	Lacamas Creek	Lat 45°42'38", long 122°28'08", in SE¼SW¼ sec.29, T.3 N., R.3 E., Clark County, at road crossing 2.9 mi (4.7 km) northeast of Proebstel.	2.27	1951, 1977-78	10-17-78 6-13-79 7-27-79 9-26-79	.30 .31 .21 .23
14144560 Fifth Plain Creek	Do.....	Lat 45°40'21", long 122°29'35", in W½ sec.7, T.2 N., R.3 E., Clark County, at State Highway 500 crossing, 0.3 mi (0.5 km) upstream from mouth, 0.5 mi (0.8 km) northwest of Proebstel.	18.9	1942, 1943, 1951, 1961, 1977-78	10-17-78 6-13-79	3.32 5.91
14144580 Lacamas Creek	Washougal River	Lat 45°38'20", long 122°27'21", in SW¼SE¼ sec.51, T.2 N., R.3 E., Clark County, 150 ft (45.7 m) upstream from county road bridge, 4.2 mi (6.8 km) northwest of Camas High School and at mile 5.5 (8.8 km).	51.4	1941-43, 1951, 1961, 1974, 1977-78	10-17-78 6-13-79	12.6 18.5

‡ Operated as continuous-record station.
a Operated as crest-stage gage.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^{3}s)
		Groenveld Creek basin				
14144600 Groenveld Creek	Columbia River	Lat 45°35'10", long 122°27'28", in sec.41, T.1 N., R.3 E., Clark County, at private road 15 ft (5 m) east of county road, 0.4 mi (0.6 km) above mouth, and 2.5 mi (4.0 km) west of Camas city center.	0.51	1958-79a	1-19-71	c17.9
		Lake River basin				
14211900 Burntbridge Creek	Lake River	Lat 45°39'07", long 122°39'18", in SE¼SW¼ sec.14, T.2 N., R.1 E., Clark County, at "F" Street, 0.3 mi (0.5 km) east of Interstate 5 at north city limits of Vancouver.	21.6	1969-71a, 1977-78	10-18-78 6-14-79 7-27-79 9-27-79	1.77 2.14 1.59 2.00
14212000 Salmon Creek	Do.....	Lat 45°46'26", long 122°26'40", in NE¼SW¼ sec.4, T.3 N., R.3 E., Clark County, 100 ft (30 m) upstream from highway bridge, 150 ft (46 m) downstream from Rock Creek, 4.3 mi (6.9 m) east of Battle Ground, and at mile 22.1 (35.6 km).	18.3	1944-75‡, 1976-79a, 1976-78	10-18-78 6-13-79 7-26-79 9-26-79	4.78 6.65 3.46 3.80
Salmon Creek	Do.....	Lat 45°44'35", long 122°32'44", in NW¼SE¼ sec.15, T.3 N., R.2 E., Clark County, 20 ft (6.1 m) upstream from N.E. Caples Road crossing, 5.3 mi (8.5 km) north of Orchards and at mile 14.6 (23.5 km).	35.7	1941-43, 1977-78	10-18-78 6-13-79 7-26-79 9-26-79	7.31 9.57 4.90 5.65
Weaver Creek	Salmon Creek	Lat 45°44'32", long 122°32'43", in NW¼SE¼ sec.15, T.3 N., R.2 E., Clark County, at State Highway 503 crossing, 0.1 mi (0.2 km) upstream from mouth, and 5.3 mi (8.5 km) north of Orchards.	6.47	1961-43, 1947, 1951, 1973, 1977-78	10-18-78 6-13-79 7-26-79 9-26-79	1.28 2.32 1.50 .92
Unnamed tributary	Do.....	Lat 45°43'22", long 122°35'23", in NE¼NW¼ sec.29, T.3 N., R.2 E., Clark County, at N.E. 139th St. crossing and 2.9 mi (4.7 km) northeast of town of Salmon Creek.	12.9	1941-43, 1947, 1951, 1977-78	10-18-78 6-13-79 7-26-79 9-27-79	3.65 3.95 3.18 3.07
Mill Creek	Do.....	Lat 45°43'51", long 122°37'35", in SW¼NE¼ sec.24, T.3 N., R.1 E., Clark County, at Salmon Creek Road crossing near mouth.	14.0	1941-43, 1947, 1951, 1961, 1967, 1977-78	10-18-78 6-13-79 7-26-79 9-27-79	.75 .70 .54 .52
Salmon Creek	Lake River	Lat 45°42'48", long 122°41'05", in NW¼SE¼ sec.28, T.3 N., R.1 E., Clark County, just above Cougar Canyon Creek, 1.1 mi (1.8 km) northeast of Felida.	85.2	1977-78	10-18-78 6-14-79 7-27-79 9-27-79	27.2 29.2 17.1 20.5
Whipple Creek	Do.....	Lat 45°44'58", long 122°42'41", in NE¼NW¼ sec.17 T.3 N., R.1 E., Clark County, at State Highway crossing, 4.8 mi (7.7 km) southeast of Ridgefield.	8.85	1947, 1951, 1961, 1977-78	10-18-78 6-14-79 7-27-79 9-27-79	2.56 2.26 1.48 1.75
		Minor basins between Lake and Lewis River				
Gee Creek	Columbia River	Lat 45°47'37", long 122°41'00", in NE¼NE¼ sec.33, T.4 N., R.1 E., Clark County, at road crossing, 3.3 mi (5.3 km) southeast of Ridgefield.	5.29	1947, 1977-78	10-18-78 6-14-79 7-27-79 9-27-79	0.25 .25 .13 .09
		Kalama River basin				
North Fork Kalama River	Kalama River	Lat 46°05'47", long 122°23'58", in NW¼NE¼ sec.14, T.7 N., R.3 E., Cowlitz County, at bridge 50 ft (15 m) upstream from mouth and 5.6 mi (9.0 km) northwest of Cougar.	12.8	1977-78	10-17-78 7-24-79 9-24-79	13.1 16.6 16.2
Elk Creek	Do.....	Lat 46°04'28", long 122°30'38", in NW¼SW¼ sec.24, T.7 N., R.2 E., Cowlitz County, at road crossing 200 ft (61 m) upstream from mouth and 5.9 mi (9.5 km) east of Pigeon Springs.	11.3	1926, 1951, 1977-78	10-17-78 6-12-79	11.7 15.1
Gobar Creek	Do.....	Lat 46°03'07", long 122°37'22", in SW¼SE¼ sec.25, T.7 N., R.1 E., Cowlitz County, 300 ft (91 m) upstream from road crossing at Pigeon Springs.	21.2	1951-52, 1961, 1973, 1977-78	10-17-78 6-12-79	21.3 30.7
Wild Horse Creek	Do.....	Lat 46°02'54", long 122°37'58", in SW¼NW¼ sec.36, T.7 N., R.1 E., Cowlitz County, 100 ft (30 m) upstream from road crossing near mouth and 0.5 mi (0.8 km) southwest of Pigeon Springs.	8.23	1951, 1961, 1977-78	10-17-78 6-12-79	7.18 9.01
Little Kalama River	Do.....	Lat 45°59'18", long 122°40'16", in NE¼SW¼ sec.22, T.6 N., R.1 E., Cowlitz County, 30 ft (9.1 m) downstream from private road crossing, 200 ft (61.0 m) downstream from mouth of Dee Creek and 6.6 mi (10.6 km) northeast of Woodland.	6.18	1977-78	10-17-78 6-13-79 9-24-79	2.91 4.62 3.01

‡ Operated as continuous-record station.
a Operated as a crest-stage gage.
c Not previously published.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft³s)
		Kalama River basin--Continued				
Italian Creek	Kalama River	Lat 46°02'01", long 122°43'42", in SW¼NE¼ sec.6, T.6 N., R.1 E., Cowlitz County, at Bratschi Doane Road crossing 0.6 mi (1.0 km) upstream from mouth and 5.3 mi (8.5 km) southwest of Pigeon Springs.	2.94	1977-78	10-17-78 6-13-79 9-24-79	1.28 2.61 1.36
Hatchery Creek	Do.....	Lat 46°02'43", long 122°48'11", in NW¼SW¼ sec.34, T.7 N., R.1 W., Cowlitz County, at Kalama River Road bridge near mouth near Salmon hatchery and 3.2 mi (5.1 km) northeast of Kalama.	5.96	1951, 1977-78	10-17-78 6-13-79	13.9 12.8
14223500 Kalama River	Columbia River	Lat 46°02'42", long 122°48'51", in NE¼SW¼ sec.33, T.7 N., R.1 W., Cowlitz County, 5.7 mi (9.2 km) downstream from Italian Creek, 2.8 mi (4.5 km) northeast of Kalama, and at mile 4.2 (6.8 km).	198	1947-75‡, 1976-77, 1976-79a	10-17-78 6-13-79 9-24-79	281 409 256
		Minor basins between Kalama and Cowlitz Rivers				
Owl Creek	Columbia River	Lat 46°05'30", long 122°52'05", in SE¼NE¼ sec.13, T.7 N., R.2 W., Cowlitz County, at old U.S. Highway 99 crossing and 1.4 mi (2.3 km) north of Carrolls.	7.81	1951, 1977-78	6-21-79	1.13
		Cowlitz River basin				
14226800 Skate Creek tributary	Skate Creek	Lat 46°42'10", long 121°48'30", in NW¼ sec.16, T.14 N., R.8 E., Lewis County, at Skate Creek road, 9.5 mi (15.3 km) northwest of Packwood.	1.22	1959-77a, 1959-60, 1965, 1966, 1975	5-22-69 7- 2-76	c28.8 c14.9
14226900 Skate Creek tributary	Do.....	Lat 46°40'30", long 121°45'10", in NE¼ sec.26, T.14 N., R.8 E., Lewis County, at Skate Creek road 6 mi (9.7 km) northwest of Packwood.	1.82	1959-75a, 1978-79a 1965-66	5-22-69	c41.1
14238800 Cowlitz River	Columbia River	Lat 46°26'19", long 122°50'35", in SW¼NW¼ sec.17, T.11 N., R.1 W., Lewis County, at State Highway 505 bridge in Toledo, and at mile 33.7 (54.2 km).	1,461	1950-70d, 1972, 1975, 1977‡, 1978	10- 3-78 12-15-78 1-26-79 2- 9-79 4-18-79 4-27-79 6-21-79 8-23-79	4,320 10,700 4,570 4,750 3,760 3,420 4,050 2,130
		Minor basins between Cowlitz River and Abernathy Creek				
Clark Creek	Columbia River	Lat 46°10'46", long 122°59'31", in SE¼NE¼ sec.13, T.8 N., R.3 W., Cowlitz County, at Pacific Highway crossing 3.8 mi (6.1 km) northwest of city center of Longview.	4.58	1949, 1977-78	6-13-79	1.34
Coal Creek	Do.....	Lat 46°11'16", long 123°02'00", in SE¼SE¼ sec.10, T.8 N., R.3 W., Cowlitz County, 200 ft (61 m) upstream from county road crossing, just upstream from Harmony Creek and 4.2 mi (6.8 km) east of Stella.	20.0	1949-50, 1967, 1977-78	6-13-79	13.3
Harmony Creek (formerly published as Mosquito Creek)	Coal Creek	Lat 46°11'16", long 123°02'06", in SE¼SE¼ sec.10, T.8 N., R.3 W., Cowlitz County, 30 ft (9.1 m) upstream from mouth and 4.2 mi (6.8 km) east of Stella.	6.12	1949, 1977-78	6-13-79	3.19
Falls Creek	Columbia River	Lat 46°11'57", long 123°06'51", in NE¼NE¼ sec.12, T.8 N., R.4 W., Cowlitz County, at old Stella Road crossing, 0.6 mi (1.0 km) north of Stella.	1.54	1977-78	6-14-79	.61
14245500 Germany Creek	Do.....	Lat 46°11'48", long 123°07'34", in NW¼NW¼ sec.12, T.8 N., R.4 W., Cowlitz County, 0.5 mi (0.8 km) upstream from mouth and 10 mi (16.1 km) northwest of Longview.	22.2	1949-50‡, 1950-54, 1977-78	6-14-79	15.0
		Abernathy Creek basin				
Abernathy Creek	Columbia River	Lat 46°15'38", long 123°10'32", in SE¼SE¼ sec.16, T.9 N., R.4 W., Cowlitz County, at road crossing 0.3 mi (0.5 km) upstream from Erick Creek and 15 mi (24 km) northwest of Longview.	9.59	1949, 1977-78	6-14-79	11.6
Slide Creek	Abernathy Creek	Lat 46°12'34", long 123°09'09", in SE¼NE¼ sec.3, T.8 N., R.4 W., Cowlitz County, 200 ft (61 m) upstream from mouth and 11.5 mi (18.5 km) northwest of Longview.	2.47	1949, 1977-78	6-14-79	1.61
14246000 Abernathy Creek	Columbia River	Lat 46°12'10", long 123°09'15", in NE¼SE¼ sec.3, T.8 N., R.4 W., Cowlitz County, 10.5 mi (16.9 km) northwest of R.A. Long High School and at mile 1.3 (2.1 km).	20.3	1949-59‡, 1973, 1977-78	6-14-79	19.1

‡ Operated as continuous-record station.
a Operated as crest-stage gage.
c Not previously published.
d Operated as a stage station (discharge measurements 1962-70).

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		Elochoman River basin				
West Fork Elochoman River	Elochoman River	Lat 46°19'18", long 123°15'40", in SW¼NE¼ sec.26, T.10 N., R.5 W., Wahkiakum County, 700 ft (213 m) upstream from private logging bridge, 800 ft (244 m) upstream from mouth and 9.8 mi (15.8 km) northeast of Skamokawa.	10.1	1977-78	10-16-78 7-25-79	16.7 8.10
Elochoman River	Columbia River	Lat 46°19'15", long 123°15'30", in SE¼NE¼ sec.26, T.10 N., R.5 W., Wahkiakum County, 800 ft (244 m) downstream from West Fork and 9.8 mi (15.8 km) northeast of Skamokawa.	35.4	1949, 1977-78	10-16-78 6-14-79 7-25-79	52.1 39.8 21.9
Beaver Creek	Elochoman River	Lat 46°13'35", long 123°19'10", in NE¼NE¼ sec.32, T.9 N., R.5 W., Wahkiakum County, at private road crossing 0.5 mi (0.8 km) upstream from mouth and 3.4 mi (5.5 km) northeast of Cathlamet.	7.21	1949, 1977-78	10-16-78 6-14-79	6.04 4.04
14247500 Elochoman River	Columbia River	Lat 46°13'17", long 123°20'28", in NE¼SE¼ sec.31, T.9 N., R.5 W., Wahkiakum County, 125 ft (38.1 m) upstream from railroad bridge, 2.4 mi (3.9 km) northeast of Cathlamet, and at mile 5.0 (8.0 km).	65.8	1941-71‡, 1972-79a 1973, 1976-78	10-16-78 6-14-79	81.4 65.2
Nelson Creek	Elochoman River	Lat 46°14'25", long 123°22'36", in SW¼NW¼ sec.25, T.9 N., R.6 W., Wahkiakum County, at old highway 12 crossing, 2.5 mi (4.0 km) north of Cathlamet.	4.03	1949, 1977	6-14-79 7-26-79	2.08 1.69
		Skamokawa Creek basin				
Skamokawa Creek	Columbia River	Lat 46°19'11", long 123°27'16", in NE¼SW¼ sec.29, T.10 N., R.6 W., Wahkiakum County, 200 ft (61.0 m) below confluence of Left-Fork and 3.4 mi (5.5 km) north of Skamokawa.	15.8	1977-78	10-16-78 6-13-79	23.0 12.9
14248000 Skamokawa Creek	Do.....	Lat 46°17'57", long 123°26'34", in NE¼NE¼ sec.5, T.9 N., R.6 W., Wahkiakum County, 25 ft (7.6 m) downstream from county road bridge and 2.0 mi (3.2 km) north of Skamokawa.	17.4	1949-50‡, 1951, 1954, 1977-78	10-17-78 6-13-79	24.0 15.4
Falk Creek	Skamokawa Creek	Lat 46°17'58", long 123°26'20", near north line NW¼ sec.4, T.9 N., R.6 W., Wahkiakum County, at county road crossing 2.1 mi (3.4 km) northeast of Skamokawa.	3.49	1949, 1977-78	10-16-78 6-13-79	3.33 1.88
Wilson Creek	Do.....	Lat 46°17'20", long 123°26'15", in SW¼SW¼ sec.4, T.9 N., R.6 W., Wahkiakum County, 100 ft (30 m) upstream from East Valley road crossing and 1.5 mi (2.4 km) northeast of Skamokawa.	13.8	1928, 1929, 1949-50, 1977-78	10-17-78 6-14-79	18.7 13.1
		Minor basin between Skamokawa Creek and Grays River				
Crooked Creek	Columbia River	Lat 46°17'56", long 123°38'52", in NE¼NE¼ sec.3, T.9 N., R.8 W., Wahkiakum County, at county road crossing, 2.0 mi (3.2 km) upstream from mouth and 2.6 mi (4.2 km) south of Rosburg.	10.2	1949, 1967, 1977-78	10-17-78 6-12-79	8.32 4.40
		Grays River basin				
14249000 Grays River	Columbia River	Lat 46°23'36", long 123°28'39", in NW¼ sec.31, T.11 N.,R.6 W., Pacific County, 500 ft (152 m) upstream from South Fork, 6.8 mi (10.9 km) northeast of town of Grays River, and at mile 17.8 (28.6 km).	39.9	1956-75‡, 1976-79a, 1977-78	10-17-78 6-13-79	67.1 45.6
Fossil Creek	Grays River	Lat 46°21'44", long 123°33'10", in NE¼SW¼ sec.9, T.10 N., R.7 W., Wahkiakum County, 75 ft (22.9 m) upstream from logging road bridge 0.1 mi (0.2 km) upstream from mouth and 2.7 mi (4.3 km) east of town of Grays River.	5.50	1928, 1949, 1977-78	10-17-78 6-13-79	7.58 4.82
Klints Creek	Do.....	Lat 46°21'22", long 123°33'30", in NW¼NW¼ sec.16, T.10 N., R.7 W., Wahkiakum County, 50 ft (15 m) below private logging road crossing and 2.5 mi (4.0 km) east of town of Grays River.	3.57	1949, 1977-78	10-17-78 6-13-79 7-26-79	3.05 1.50 .72
Fall Creek	Hull Creek	Lat 46°22'25", long 123°35'20", in SW¼SE¼ sec.6, T.10 N., R.7 W., Wahkiakum County, 30 ft (9.1 m) upstream from county road crossing, near mouth and 1.6 mi (2.6 km) northeast of town of Grays River.	3.02	1953, 1977-78	10-17-78 6-12-79 7-26-79	3.78 1.31 .88
Malone Creek	Seal Slough	Lat 46°20'08", long 123°38'32", in SW¼NW¼ sec.23, T.10 N., R.8 W., Wahkiakum County, just upstream from U.S. Highway 830 crossing at Rosburg.	2.72	1949, 1977-78	10-17-78 6-12-79	3.12 1.26

‡ Operated as continuous-record station.
a Operated as crest-stage station.

Discharge measurements made at miscellaneous sites during water year 1979

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		Deep River basin				
Deep River	Columbia River	Lat 46°21'39", long 123°40'50", in NW¼SW¼ sec.9, T.10 W., R.8 W., Wahkiakum County, upstream side of bridge, just upstream from confluence of Henderson Creek and 2.6 mi (4.2 km) northwest of Rosburg.	1.76	1977-78	10-17-78 6-12-79	1.78 .42

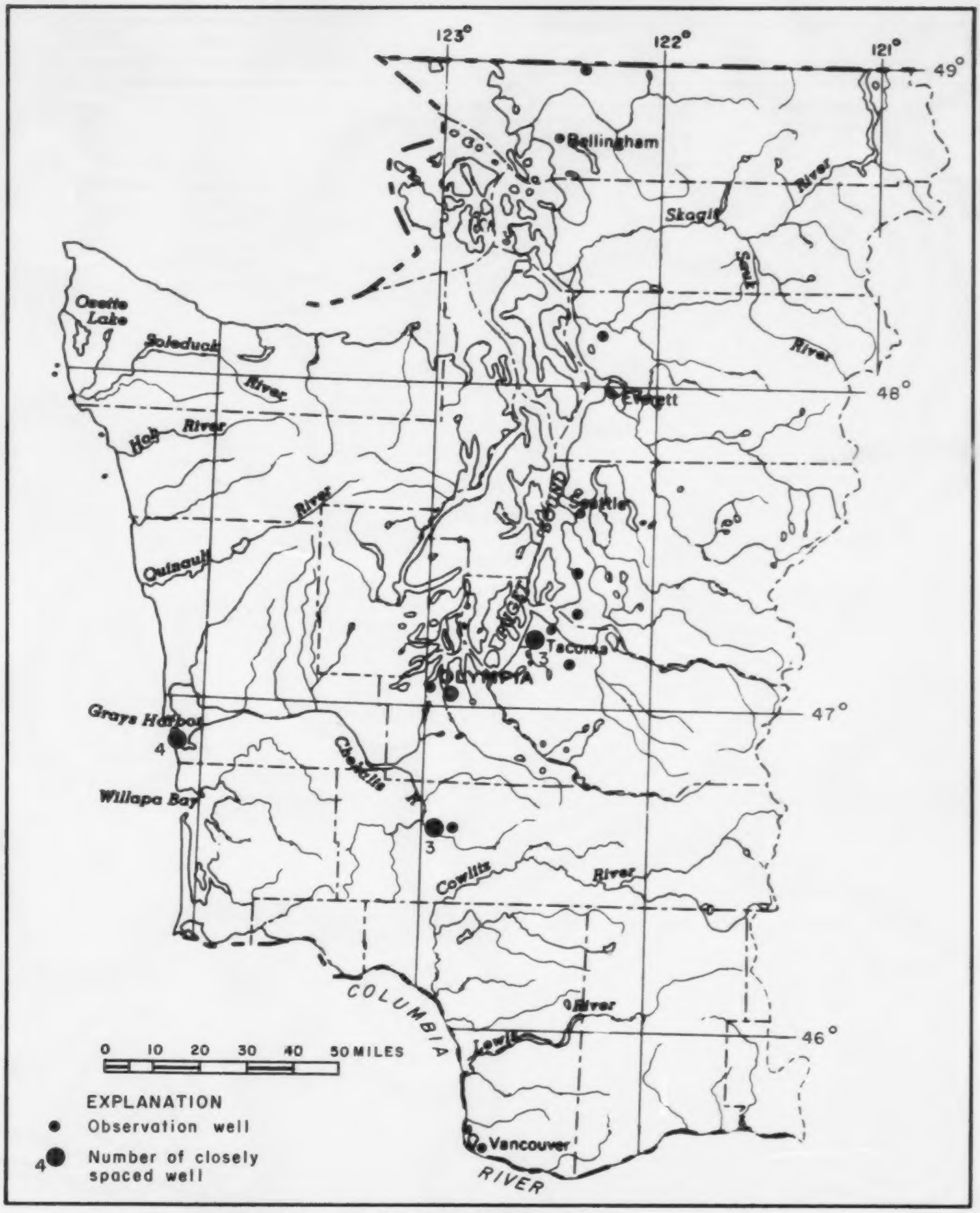
123°
122°
121°
49°
48°
47°
46°
Bellingham
Skagit River
Sauk River
Ozette Lake
Soleduck River
Hoh River
River
Quinault
Everett
Seattle
PUGET SOUND
Tacoma
OLYMPIA
Grays Harbor
Willapa Bay
Chehalis R
Cowlitz River
Lewis River
COLUMBIA RIVER
Vancouver
4
3
3
0 10 20 30 40 50 MILES
EXPLANATION
● Observation well
4● Number of closely spaced well

Figure 22. Map of Western Washington showing locations of ground-water level observations.

GRAYS HARBOR COUNTY

465123124062201. Local number, 16/12W-24J4.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 15.65 ft (4.9 m) National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 187 to 192 ft (57.0 to 58.5 m), water level measured in 12 in (300 mm) diameter casing.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.19 ft (2.801 m) below land-surface datum, Mar. 14, 1972; lowest measured, 11.05 ft (3.368 m) below land-surface datum, Oct. 4, 1974, Aug. 8, 1979.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 22, 1979	9.96	Aug. 8, 1979	11.05				

465123124062202. Local number, 16/12W-24J5.
LOCATION.--46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 15.65 ft (4.9 m) National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 269 to 279 ft (82.0 to 85.0 m), water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.30 ft (2.530 m) below land-surface datum, Jan. 10, 1978; lowest measured, 10.81 ft (3.295 m) below land-surface datum, Aug. 8, 1979.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 22, 1979	9.77	Aug. 8, 1979	10.81				

465123124062203. Local number, 16/12W-24J6.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 15.65 ft (4.9 m) National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 327 to 332 ft (99.7 to 101.2 m), water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.66 ft (2.640 m) below land-surface datum, Jan. 10, 1978; lowest measured, 10.37 ft (3.161 m) below land-surface datum, Aug. 8, 1979.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 22, 1979	9.61	Aug. 8, 1979	10.37				

465123124062204. Local number, 16/12W-24J7.
LOCATION.--Lat 46°51'23", long 124°06'22", Hydrologic Unit 17100106, near Westport.
Owner: State of Washington, Department of Ecology.
AQUIFER.--Sandy clay of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation-test, artesian well, diameter 12 to 8 in (300 to 200 mm), depth 700 ft (213.4 m), 12 in (300 mm) diameter casing to 398 ft (121.3 m), 8 in (200 mm) diameter casing 378 to 678 ft (115.2 to 206.7 m), perforated 187 to 192 ft (57.0 to 58.5 m), 269 to 279 ft (82.0 to 85.0 m), 327 to 332 ft (99.7 to 101.2 m), and 516 to 521 ft (157.3 to 158.8 m).
DATUM.--Land-surface datum is 15.65 ft (4.9 m) National Geodetic Vertical Datum of 1929.
REMARKS.--Monitored depth interval from 516 to 521 ft (157.3 to 158.8 m), water level measured in piezometer.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.66 ft (2.640 m) below land-surface datum, Oct. 24, 1973; lowest measured, 11.01 ft (3.356 m) below land-surface datum, Oct. 30, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 22, 1979	10.14	Aug. 8, 1979	10.12				

KING COUNTY

471715122191501. Local number, 21/4-20Q1.
LOCATION.--Lat 47°17'15", long 122°19'15", Hydrologic Unit 17110019, near Federal Way.
Owner: Water District No. 124.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 8 in (200 mm), depth 150 ft (45.7 m).
DATUM.--Altitude of land-surface datum is 235 ft (71.6 m)
PERIOD OF RECORD.--September 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.07 ft (1.850 m) below land-surface datum, Feb. 8, 1967; lowest measured, 38.04 ft (11.595 m) below land-surface datum, Oct. 10, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 10, 1978	38.04	Mar. 7, 1979	17.60				

472457122185801. Local number, 22/4-8A1.
LOCATION.--Lat 47°24'57", long 122°18'58", Hydrologic Unit 17110019, near Des Moines.
Owner: Water District No. 75.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 12 in (300 mm), depth 395 ft (120.4 m).
DATUM.--Altitude of land-surface datum is 200 ft (61.0 m).
PERIOD OF RECORD.--September 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 59.03 ft (17.992 m) below land-surface datum, Apr. 23, 1968; lowest measured, 74.53 ft (22.716 m) below land-surface datum, Aug. 15, 1979.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Jan. 9, 1979	69.66	Aug. 15, 1979	74.53				

LEWIS COUNTY

463441122485201. Local number, 13/1W-28P1.
LOCATION.--Lat 46°34'41", long 122°48'52", Hydrologic Unit 17100103.
Owner: R. L. Wade.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic and irrigation artesian well, diameter 6 in (150 mm), depth 112 ft (34.1 m), cased to 112 ft (34.1 m).
DATUM.--Altitude of land-surface datum is 360 ft (110 m).
PERIOD OF RECORD.--Highest water level measured, 63.8 ft (19.45 m) above land-surface datum, Apr. 18, 1956; lowest measured, 11.60 ft (3.54 m) above land-surface datum, Apr. 27, 1979.

WATER LEVEL, IN FEET ABOVE LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 20, 1978	17.60	Apr. 27, 1979	11.60				

463527122502001. Local number, 13/1W-29D1.
LOCATION.--Lat 46°35'27", long 122°50'20", Hydrologic Unit 17100103.
Owner: J. C. Marshall.
AQUIFER.--Glacial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in (150 mm), depth 230 ft (70.1 m), cased to 212 ft (64.6 m).
DATUM.--Altitude of land-surface datum is 305 ft (93.0 m).
PERIOD OF RECORD.--July 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 98.0 ft (29.9 m) above land-surface datum, June 21, 1968; lowest measured, 1.5 ft (0.457 m) above land-surface datum, Jan. 23, 1973.

WATER LEVEL, IN FEET ABOVE LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 20, 1978	4.64	Apr. 27, 1979	4.63				

463532122393202. Local number, 13/1-22R2.
LOCATION.--Lat 46°35'32", long 122°39'32", Hydrologic Unit 17100103.
Owner: Chas. E. Greene.
AQUIFER.--Glacial clay and sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 8 in (200 mm), depth 150 ft (45.7 m), cased to 113 ft (34.4 m).
DATUM.--Altitude of land-surface datum is 600 ft (183 m).
PERIOD OF RECORD.--March 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.1 ft (8.56 m) above land-surface datum, Jan. 5, Feb. 7, May 12, June 23, 1967; lowest measured, 3.5 ft (1.07 m) above land-surface datum, Nov. 20, 1972, Oct. 16, 1974.

WATER LEVEL, IN FEET ABOVE LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 20, 1978	5.50	May 9, 1979	-39.93				

LEWIS COUNTY--Continued

463558122502201. Local number, 13/1W-20E1.
LOCATION.--Lat 46°35'58", long 122°50'22", Hydrologic Unit 17100103.
Owner: A. B. Isberg.
AQUIFER.--Marine sandstone of Eocene Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in (150 mm), depth 1,645 ft (501.4 m) cased to 204 ft (62.2 m).
DATUM.--Altitude of land-surface datum is 320 ft (97.5 m).
PERIOD OF RECORD.--July 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 76.0 ft (23.16 m) above land-surface datum, Aug. 12, 1968; lowest measured, 0.50 ft (0.152 m) below land-surface datum, Apr. 27, 1979.

WATER LEVEL, IN FEET ABOVE LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 20, 1978	0.82	Apr. 27, 1979	-0.50				

PIERCE COUNTY

470933122182001. Local number, 19/4-4L1.
LOCATION.--Lat 47°09'33", long 122°18'20", Hydrologic Unit 17110014.
Owner: Fruitland Mutual Water Company.
AQUIFER.--Glacial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (150 mm), depth 240 ft (73.2 m), cased to 240 ft (73.2 m), perforated 200 to 235 ft (61.0 to 71.6 m).
DATUM.--Altitude of land-surface datum is 355 ft (108.2 m).
PERIOD OF RECORD.--June 1964 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 207.80 ft (63.337 m) below land-surface datum, Aug. 10, 1972; lowest, dry, Jan. 4, Mar. 1, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 6, 1978	231.22	Mar. 7, 1979	234.15A	July 20, 1979	231.11A	Sept. 4, 1979	230.06B
Jan. 9, 1979	233.51	May 9	231.99A				

471308122305501. Local number, 20/2-14L1.
LOCATION.--Lat 47°13'08", long 122°30'55", Hydrologic Unit 17110019.
Owner: Town of Fircrest, well No. 8.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 20 in (500 m), depth 141 ft (43.0 m), cased to 112 ft (34.1 m).
DATUM.--Altitude of land-surface datum is 295 ft (89.9 m).
PERIOD OF RECORD.--October 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 79.21 ft (24.143 m) below land-surface datum, Apr. 24, 1972; lowest measured, 94.1 ft (28.68 m) below land-surface datum, Mar. 1, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 6, 1978	91.50	Mar. 7, 1979	86.40	July 9, 1979	86.43	Sept. 10, 1979	87.52B
Jan. 9, 1979	85.96	May 9	85.82B				

471338122282201. Local number, 20/3-18C1.
LOCATION.--Lat 47°13'38", long 122°28'22", Hydrologic Unit 17110019.
Owner: City of Tacoma.
AQUIFER.--Glacial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused-test artesian well, diameter 12 in (300 mm), depth 185 ft (56.4 m), cased to 152 ft (46.3 m).
DATUM.--Altitude of land-surface datum is 310 ft (94.5 m).
PERIOD OF RECORD.--March 1952 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 63.85 ft (19.461 m) below land-surface datum, Oct. 5, 1954; lowest measured, 127.38 ft (38.825 m) below land-surface datum, Mar. 27, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 6, 1978	105.60	Mar. 7, 1979	105.04	July 9, 1979	120.10A	Sept. 10, 1979	109.97B
Jan. 9, 1979	104.93	May 9	104.72				

A Well being pumped.
B Well recently pumped.

PIERCE COUNTY--Continued

471358122302207. Local number, 20/2-11J7.

LOCATION.--Lat 47°13'58", long 122°30'22", Hydrologic Unit 17110019.

Owner: Fircrest Well No. 3.

AQUIFER.--Glacial sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (300 mm), depth 152 ft (46.3 m), perforated 88 to 94 ft (26.8 to 28.7 m) and 141 to 149 ft (34.0 to 45.4 m).

DATUM.--Altitude of land-surface datum is 285 ft (86.9 m).

PERIOD OF RECORD.--August 1963 to February 1964, December 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 60.31 ft (18.382 m) below land-surface datum, Feb. 14, 1964; lowest measured, 68.21 ft (20.790 m) below land-surface datum, Oct. 1, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 3, 1978	63.46A	Mar. 7, 1979	62.70A	July 9, 1979	64.35A	Sept. 10, 1979	65.66A
Jan. 9, 1979	62.94A	May 9	62.13A				

SNOHOMISH COUNTY

481115122082001. Local number, 31/5-10J3.

LOCATION.--Lat 48°11'15", long 122°08'20", Hydrologic Unit 17110008, near Arlington.

Owner: Robert Wollin.

AQUIFER.--Glacial sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in (150 mm), depth 120 ft (36.6 m), cased to 117 ft (35.7 m).

DATUM.--Altitude of land-surface datum is 85 ft (25.9 m).

PERIOD OF RECORD.--September 1945 to October 1961, May 1968 to current year.

EXTREMES FOR PERIOD OF RECORD--Highest water level measured, 21.37 ft (6.514 m) below land-surface datum, Sept. 17, 1948; lowest measured, 32.37 ft (9.866 m) below land-surface datum, Sept. 30, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Nov. 7, 1978	31.25	Feb. 5, 1979	30.79	Apr. 22, 1979	34.70B	Aug. 22, 1979	32.16B
Dec. 11, 1978	30.68						

THURSTON COUNTY

470318122581601. Local number, 18/2W-7R1.

LOCATION.--Lat 47°03'18", long 122°58'16", Hydrologic Unit 17110019, near Olympia.

Owner: Kenneth McBride.

AQUIFER.--Glacial sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 8 in (200 mm), depth 125 ft (38.1 m), cased to 120 ft (36.6 m).

DATUM.--Altitude of land-surface datum is 170 ft (51.8 m).

PERIOD OF RECORD.--July 1958, November 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 68.98 ft (21.025 m) below land-surface datum, June 7, 1972; lowest measured, 87.26 ft (26.597 m) below land-surface datum, Jan. 16, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 18, 1978	83.86	Feb. 27, 1979	82.89	June 25, 1979	79.45	Sept. 19, 1979	81.51
Dec. 6	82.40	Apr. 11	80.62				

WHATCOM COUNTY

485934122193801. Local number, 40/4-5D1.

LOCATION.--48°59'34", long 122°19'38", Hydrologic Unit 17110001, Van Buren and Hoverstick Roads, Sumas.

Owner: Paul Roorda.

AQUIFER.--Glacial gravel of Pleistocene Age.

WELL CHARACTERISTICS.--Dug domestic and stock water-table well, 20 by 30 in (500 by 750 mm), depth 61 ft (18.6 m), lined with concrete to 61 ft (18.6 m).

DATUM.--Altitude of land-surface datum is 180 ft (55 m).

REMARKS.--Water levels used in monthly Water Resources Review.

PERIOD OF RECORD.--October 1940 to current year (discontinued).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 47.98 ft (14.624 m) below land-surface datum, Mar. 20, 1972; lowest dry, water level not measureable, Jan. 10, 1944, Oct. 4, 1944, Jan. 1, 1953, Sept. 30. 1958, Nov. 27, 1973, Sept. 27, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
Oct. 20, 1978	57.68	Dec. 24, 1978	58.38	Feb. 24, 1979	57.68	Apr. 24, 1979	56.48
Nov. 21	57.98	Jan. 22, 1979	58.51	Mar. 20	56.94	May 23	56.65

A Well being pumped.

B Well recently pumped.

QUALITY OF GROUND WATER

PACIFIC COUNTY

LOCAL IDENT-I-FIER	STATION NUMBER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
14/11W-03G01	464332124011801	46 43 32	124 01 18	01	78-11-29	0845	208	159	7.5

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO
14/11W-03G01	78-11-29	9.4	5	48	0	11	4.9	12	35	.8

LOCAL IDENT-I-FIER	DATE OF SAMPLE	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)
14/11W-03G01	78-11-29	13	1.0	53	4.0	21	.1	31	114	107

LOCAL IDENT-I-FIER	DATE OF SAMPLE	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
14/11W-03G01	78-11-29	.16	.11	0	2

PIERCE COUNTY

LOCAL IDENT-I-FIER	STATION NUMBER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
20/02E-05D04	471527122352201	47 15 22	122 35 15	01	79-03-20	1425	154	7.6	11.0
20/02E-07F01	471419122361101	47 14 20	122 36 14	01	79-03-21	1120	199	7.7	9.6
21/01E-02N01	471948122390301	47 19 58	122 39 03	01	79-03-15	1215	142	7.9	10.0
21/01E-09R02	471903122403301	47 19 03	122 40 33	01	79-03-15	1410	170	8.0	9.0
21/01E-10J03	471916122392502	47 19 16	122 39 25	02	79-03-15	1305	185	7.8	9.6
21/01E-11P02	471902122384001	47 19 02	122 38 40	01	79-03-15	1340	101	7.3	10.2
21/01E-12D02	471946122374701	47 19 46	122 37 47	01	79-03-15	1140	97	7.3	9.6
21/01E-12D03	471943122373201	47 19 43	122 37 32	01	79-03-15	1050	117	9.4	9.4
21/01E-15F01	471829122394001	47 18 33	122 39 49	01	79-03-15	1540	141	7.8	7.6
21/01E-16F01	471825122410301	47 18 25	122 41 03	01	79-03-15	1450	1220	7.6	8.0
21/01E-21L01	471736122411601	47 17 36	122 41 16	01	79-03-21	0845	562	7.3	9.0
21/01E-22E01	471742122401201	47 17 37	122 40 11	01	79-03-21	1015	199	7.6	10.6
21/01E-24F02	471741122371801	47 17 41	122 37 18	01	79-03-20	1510	144	7.5	11.2
21/01E-25D01	471702122373801	47 17 07	122 37 43	01	79-03-21	1505	123	7.1	8.6
21/01E-28F01	471658122410501	47 16 58	122 41 05	01	79-03-21	0940	289	8.0	10.6
21/01E-34A01	471620122391901	47 16 20	122 39 19	01	79-03-21	1250	144	7.2	10.2
21/01E-35D01	471609122385701	47 16 09	122 38 57	01	79-03-21	1350	292	7.8	11.0
21/02E-04E02	472024122341001	47 20 22	122 33 54	01	79-03-20	0955	133	7.2	8.6
21/02E-07B01	471942122355201	47 19 38	122 35 54	01	79-03-15	1010	105	7.7	9.6
21/02E-08C01	471947122345201	47 19 47	122 34 52	01	79-03-20	1115	142	7.6	10.6
21/02E-17D03	471852122361801	47 18 56	122 35 00	01	79-03-19	1450	122	7.6	7.8
21/02E-20K02	471646122332101	47 16 46	122 33 21	01	79-03-19	1530	1240	7.6	10.2
21/02E-29C01	471707122345001	47 17 11	122 34 41	01	79-03-20	1240	147	7.2	8.0
21/02E-32E07	471601122351001	47 16 05	122 35 10	01	79-03-20	1315	190	7.5	10.2
21/02E-32M02	471547122350201	47 15 46	122 35 01	01	79-03-20	1345	130	7.4	10.2
21/10E-35P01	471543122384701	47 15 39	122 38 49	01	79-03-21	1230	166	7.2	10.2
22/01E-14R01	472403122381401	47 24 03	122 38 14	01	79-03-13	0950	128	8.2	9.6
22/01E-14Q02	472327122380901	47 23 27	122 38 09	01	79-03-13	1035	117	8.7	8.4
22/01E-15L01	472335122395001	47 23 36	122 39 47	01	79-03-14	0850	120	8.2	8.6
22/01E-15Q01	472330122394101	47 23 30	122 39 41	01	79-03-13	1425	142	8.6	8.2
22/01E-16N01	472327122413001	47 23 24	122 41 35	01	79-03-13	1155	116	7.4	9.6
22/01E-17C01	472408122423001	47 24 10	122 42 18	01	79-03-13	1245	114	7.4	9.4
22/01E-22P02	472234122400001	47 22 43	122 39 46	01	79-03-14	0950	130	8.0	10.2

PIERCE COUNTY--Continued

LOCAL IDENT- I- FIER	DATE OF SAMPLE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
20/02E-05D04	79-03-20	7.0	94	.13	.00	.00
20/02E-07F01	79-03-21	3.6	129	.18	.03	.00
21/01E-02N01	79-03-15	2.4	102	.14	.02	.00
21/01E-09H02	79-03-15	2.9	110	.15	.00	.00
21/01E-10J03	79-03-15	3.8	120	.16	.13	.00
21/01E-11P02	79-03-15	2.7	71	.10	.05	.00
21/01E-12D02	79-03-15	4.4	78	.11	.79	.00
21/01E-12D03	79-03-15	3.1	92	.13	.05	.00
21/01E-15F01	79-03-15	4.8	98	.13	.00	.00
21/01E-16F01	79-03-15	310	696	.95	.50	.10
21/01E-21L01	79-03-21	130	387	.53	.38	.00
21/01E-22E01	79-03-21	8.3	131	.18	1.2	.00
21/01E-24F02	79-03-20	3.4	83	.11	.09	.00
21/01E-25D01	79-03-21	4.1	79	.11	.07	.00
21/01E-28F01	79-03-21	4.2	187	.25	.22	.00
21/01E-34A01	79-03-21	21	106	.14	.39	.00
21/01E-35D01	79-03-21	20	190	.26	.01	.00
21/02E-04E02	79-03-20	4.4	89	.12	1.4	.00
21/02E-07B01	79-03-15	3.1	79	.11	.00	.00
21/02E-08C01	79-03-20	2.5	91	.12	.02	.00
21/02E-17D03	79-03-19	2.8	80	.11	.37	.00
21/02E-20K02	79-03-19	300	718	.98	.02	.10
21/02E-29C01	79-03-20	4.3	87	.12	.35	.00
21/02E-32E07	79-03-20	5.6	111	.15	.07	.00
21/02E-32H02	79-03-20	3.4	82	.11	.08	.00
21/10E-35P01	79-03-21	5.0	97	.13	1.0	.00
22/01E-14B01	79-03-13	2.4	84	.11	.00	.00
22/01E-14Q02	79-03-13	2.1	78	.11	.00	.00
22/01E-15L01	79-03-14	1.8	82	.11	.00	.00
22/01E-15Q01	79-03-13	1.9	91	.12	.02	.00
22/01E-16N01	79-03-13	2.8	75	.10	.08	.00
22/01E-17C01	79-03-13	3.4	85	.12	.78	.00
22/01E-22P02	79-03-14	1.8	88	.12	.01	.00

LOCAL IDENT- I- FIER	STATION NUMBER	LAT- I- TUDE	LONG- I- TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)
22/01E-23C01	472315122383601	47 23 17	122 38 26	01	79-03-14	1045	140	7.3	7.4
22/01E-24B01	472308122365901	47 23 08	122 36 59	01	79-03-19	1115	101	7.5	10.2
22/01E-25C03	472221122371401	47 22 21	122 37 14	01	79-03-14	1145	150	8.2	9.8
22/01E-25F02	472204122371701	47 22 04	122 37 15	01	79-03-14	1330	110	7.5	9.4
22/01E-26R04	472141122375901	47 21 41	122 37 59	01	79-03-14	1245	123	7.7	9.8
22/01E-29A01	472210122415301	47 22 21	122 41 44	01	79-03-13	1405	102	8.1	8.6
22/01E-32H01	472119122414501	47 21 20	122 41 56	01	79-03-13	1430	107	7.7	9.0
22/01E-35H02	472117122375201	47 21 20	122 38 07	01	79-03-14	1420	147	7.4	9.6
22/02E-17P01	472325122344101	47 23 21	122 34 40	01	79-03-19	1020	112	7.8	9.6
22/02E-19C01	472319122360701	47 23 19	122 36 07	01	79-03-19	0925	115	7.3	8.6
22/02E-20E04	472247122350501	47 22 57	122 35 14	01	79-03-19	0955	88	7.4	8.2
22/02E-28A01	472220122325601	47 22 16	122 32 59	01	79-03-19	1220	108	7.4	9.8
22/02E-29D01	472136122343401	47 21 37	122 34 37	01	79-03-19	1320	104	7.9	9.4
22/02E-31H01	472110122352001	47 21 10	122 35 20	01	79-03-20	1030	83	7.4	9.4
22/02E-31J01	472056122352101	47 21 07	122 35 21	01	79-03-20	0835	96	7.8	9.8
22/02E-33F01	472120122331301	47 21 18	122 33 36	01	79-03-20	0910	130	8.1	8.6

PIERCE COUNTY--Continued

LOCAL IDENT- I- FIER	DATE OF SAMPLE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
22/01E-23C01	79-03-14	3.7	98	.13	2.0	.10
22/01E-24B01	79-03-19	2.5	59	.08	.03	.00
22/01E-25C03	79-03-14	1.8	111	.15	.03	.10
22/01E-25F02	79-03-14	2.5	76	.10	.03	.00
22/01E-26H04	79-03-14	2.3	96	.13	.00	.00
22/01E-29A01	79-03-13	2.6	66	.09	.12	.00
22/01E-32H01	79-03-13	2.6	74	.10	.16	.00
22/01E-35H02	79-03-14	3.6	99	.13	.70	.00
22/02E-17P01	79-03-19	2.5	63	.09	.01	.00
22/02E-19C01	79-03-19	5.0	64	.09	.96	.00
22/02E-20E04	79-03-19	2.6	54	.07	.33	.00
22/02E-28A01	79-03-19	2.3	79	.11	.00	.00
22/02E-29Q01	79-03-19	2.3	70	.10	.01	.00
22/02E-31H01	79-03-20	2.5	65	.09	.06	.00
22/02E-31J01	79-03-20	3.3	72	.10	.03	.00
22/02E-33F01	79-03-20	2.8	97	.13	.01	.00

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